THE NTIA REAUTHORIZATION ACT OF 1999

HEARING

BEFORE THE

SUBCOMMITTEE ON TELECOMMUNICATIONS, TRADE, AND CONSUMER PROTECTION

OF THE

COMMITTEE ON COMMERCE HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

MAY 11, 1999

Serial No. 106–55

Printed for the use of the Committee on Commerce

U.S. GOVERNMENT PRINTING OFFICE

56–610CC WASHINGTON : 1999

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THE NTIA REAUTHORIZATION ACT OF 1999

TUESDAY, MAY 11, 1999

HOUSE OF REPRESENTATIVES,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS,
TRADE, AND CONSUMER PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 2 p.m., in room 2123, Rayburn House Office Building, Hon. W.J. "Billy" Tauzin (chairman) presiding.

Members present: Representatives Tauzin, Deal, Shimkus, Pickering, Markey, Luther, and Dingell (ex officio).

Also present: Representative Upton.

Staff present: Mike O'Rielly, professional staff member; Cliff Riccio, legislative clerk; and Andy Levin, minority counsel.

Mr. TAUZIN. The Subcommittee on Telecommunications, Trade and Consumer Protection will please come to order. I would like to thank you all for being here for the hearing on the NTIA Reauthorization Act of 1999.

This hearing is an opportunity to take a look at a discussion draft of legislation that tries to help reform NTIA to be more efficient and better equipped to handle the better changing world of communications.

NTIA is a small Agency within the Department of Commerce. Some of the NTIA's core functions include serving as the President's principal advisor on telecommunications matters—I thought the Vice President did that—signing and managing spectrum for Federal users, representing the United States on telecommunications trade matters, and NTIA also administers two active Federal grant programs.

Congress last authorized the agency 7 years ago, and this committee held a hearing on the agency's reform 2 years ago. Let me say at the outset that I believe this discussion draft, which all of you have received and focused your testimony on, is just that, a discussion draft upon which we hope to base some dialog. And I want to thank the members who worked very hard to make this possible—Mr. Upton, Mr. Deal and Mr. Shimkus in particular—and offer to them again the assistance of the Chair in coming to some agreements on the bill.

The NTIA Reauthorization Act of 1999 will be introduced in the House soon, and changes between now and then could reflect the exchange that we have today. If there are problems that you have with the discussion draft, now is the chance to make them known and to suggest changes as may be the case.

The draft does several things. First, it authorizes appropriations for NTIA operations. It was therefore imperative to have its head of operations, my good friend, Larry Irving, here to discuss the entire draft as well as the overall reform effort.

Second, it deals with the spectrum management function of NTIA. We have an opportunity to hear from a representative of the Department of Defense to talk about something other than Kosovo, to talk about the spectrum management of NTIA and how his agency as well as representatives from UPS will discuss with us how spectrum management by NTIA actually aids the main competition to their business and serves the agencies for whom it is designed to serve.

What the draft does is to statutorily require NTIA to receive full reimbursement from the other Federal agencies for the spectrum management duties that NTIA performs. A very important issue of spectrum management reimbursement or lack thereof has been an ongoing problem, and even though NTIA has improved on this, right now the other agencies will only pay about 80 percent of what they owe. I wonder how the IRS would react if you or I decided to pay 20 percent less in taxes this year and claimed there is just no way that I can give you the rest, so do without it.

The discussion draft sets up a mechanism to find the value of the lab in Boulder, Colorado and see if there is an interest in the lab's purchase.

Fourth, the draft establishes a road map for the future of NTIA. The draft requires GAO and the Inspector General, who is represented here today, to conduct studies into the long-term efficiency of the agency and, in turn, for NTIA to report to Congress its final plan for reform. It is important to note that the discussion draft does not mention the grant programs that operate under NTIA, its largest expenditure in the area of largest controversy.

It is my hope that this hearing should examine whether these programs are already allocated on similar programs in other Federal agencies. If my memory serves me correctly, it was Chairman Bliley who mentioned in our last hearing on this issue that there is evidence of grants given to entities who compete against private firms. This issue is one certainly we ought to review today. At the very least, there is room for improvement in this area.

At the end of the day, the American public and this subcommittee will be more educated on the question of whether targeted reform of NTIA is necessary, justified, and beneficial to American taxpayers. I want to thank the witnesses here before us in advance and look forward to their testimony.

The Chair is now pleased to recognize the ranking member of the full Commerce Committee, the gentleman from Michigan, Mr. Dingell, for an opening statement.

Mr. DINGELL. Thank you, Mr. Chairman. I commend you for holding this hearing and appreciate the fact that we are going into the question of the reauthorization of NTIA which has not for some time been reauthorized. The agency has been acting without express authorization since 1994, and I commend you for your efforts to remedy that unfortunate situation.

Mr. Chairman, I believe you join me in supporting the important functions that NTIA reforms. It is a well-run agency, thanks in

good part to the fine leadership of Larry Irving who was associated intimately with this committee over the years. When writing legislation, the committee often calls upon NTIA to conduct studies and make telecommunications policy recommendations. We rely on that agency because it has a well-deserved reputation for conducting balanced and thorough reviews.

In fact, NTIA was recently tapped by this committee to perform an important study on the impediments to cable TV competition in rural markets. You, Mr. Chairman, were quite forthright in explaining to the reporters why the committee made that selection. You said, "There is confidence in this committee with the NTIA that does not extend to the FCC." I wonder why it is this committee does not hold such high enthusiasm for the FCC, but certainly I understand why it is that we approve of the activities of NTIA. And I certainly can't agree with you more.

For that reason, Mr. Chairman, I am somewhat troubled by the so-called discussion draft now being circulated. I hope this draft is merely a first cut made by the staff, because it contains some apparent serious defects. First, it contains no funding for the Telecommunications and Information Infrastructure Assistance Program, or the TIIAP. TIIAP is arguably the most effective information technology grant program available today. The program provides seed money for nonprofit groups for the best and most creative projects that might otherwise never get off the ground. It is a tremendous success story that has touched community-based organizations all over the country, many no doubt in districts served by members of this committee. Congress has consistently appropriated funds to this program for each of the past 5 years, and certainly there is no evidence to suggest that such funding should be curtailed.

My hope, Mr. Chairman, is that the elusive TIIAP program was a simple oversight in the drafting process, and that matter will be corrected.

Second, the draft contemplates sales of NTIA's research lab in Boulder, Colorado to a private entity. Privatization on many occasions makes great sense. For example, it may be done to gain operating efficiencies. It may be done to recoup value for the taxpayers. It may be done because the investment is no longer useful for its intended purpose. I am not sure that any of these reasons apply in this case. In fact, the sale of this facility may actually reduce efficiency and lose value to the taxpayer.

I look forward to hearing from the witnesses today on these and other topics relative to NTIA's reauthorization. It is a critically important responsibility of this committee, and I look forward to working with you and Chairman Bliley to fashion a bill we can all support. Thank you again for holding this hearing and for initiating a very important process. I yield back the balance of my time.

Mr. TAUZIN. I thank the gentleman.

The Chair now yields to Mr. Upton.

Mr. UPTON. Thank you, Mr. Chairman. We all appreciate this hearing on NTIA. One of the important duties of our committee is to conduct oversight hearings on departments and agencies under our jurisdiction.

It has been a number of years since the NTIA was last reauthorized, so I believe today's hearing will provide the subcommittee with important information regarding the workings of the agency and how it is addressing telecommunications issues that truly face our Nation.

I am also looking forward to a discussion of the grant program under the agency's direction and the process by which Federal funding has been allocated to recipients around the country. Although the formal NTIA bill is close to being introduced, the discussion draft that has been circulated should in fact serve as a good starting point as this committee seeks to develop a bill that is fiscally responsible, bipartisan, and in the best interests of the American people. I yield back the balance of my time.

Mr. TAUZIN. I thank the gentleman.

Mr. Shimkus is recognized for an opening statement.

Mr. SHIMKUS. Thank you, Mr. Chairman.

I appreciate you calling this hearing today, and I would like to also thank Chairman Bliley and yourself for allowing me to be part of the working group on reauthorization. I am proud of the work we have done, especially the issue that we have sorted through, our discussion draft that we have before us today. While it does not address all of NTIA's programs or the concerns voiced by members of the working group, I believe it is a very good start in the reauthorization of the agency.

Mr. Chairman, I am specifically interested in the grant programs and how we can make them work efficiently, especially TIIAP. Additionally, there is an ever-present issue of the duplicative nature of the grant program that I think we need and should address. These grants allow many organizations to gain access to new technologies, and most of the time these grantees work hard to fulfill their obligations under the grant contract.

Additionally, I believe that the good that comes from the grant program should continue. However, there are programs with TIIAP that we need to take a close look at before any authorization language is added to the bill. I realize that the IG has reviewed some of the grants that have had problems, and also NTIA's grant process. I will be following that up with questions in the question period. While NTIA has recognized some of these problems and tried to correct them, more can still be done to make these grant programs even more beneficial.

Thank you for holding this hearing, Mr. Chairman, and I look forward to today's testimony.

Mr. TAUZIN. I thank the gentleman.

[Additional statement submitted for the record follows:]

PREPARED STATEMENT OF HON. NATHAN DEAL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF GEORGIA

Thank you, Mr. Chairman, for holding this hearing today regarding reauthorization of the National Telecommunications and Information Administration (NTIA). As a member of Chairman Bliley's task force to reauthorize NTIA under the Department of Commerce, I appreciate your attention to this important matter.

I believe the draft bill before our discussion today is a good baseline from which to examine NTIA. While we held a hearing on the agency in 1997, and studies have been conducted to look at individual components of NTIA programs and grants, we must gain perspective for the agency as a whole. Thus, as we advance further into the age of telecommunications, I agree it is pertinent to examine the agency overall.

Perhaps one of the most significant tasks of the NTIA is managing radio spectrum for the federal government. We must ensure that national departments and agencies have access to the spectrum necessary for public safety measures, education, and consumer protection, while avoiding interference over the radio waves. For example, our military and air traffic controllers greatly depend on adequate and reliable spectrum to succeed in their government functions. I look forward to hearing from Col. Skinner of the Department of Defense on this issue today.

Spectrum management must be efficient. I am pleased that the discussion draft of legislation would require NTIA to receive reimbursement for all spectrum management functions conducted for other federal agencies. As you know, previous appropriations bills in Congress have asked that NTIA recoup only 80 percent of reimbursement costs. The provisions of the draft bill would provide NTIA with a statutory requirement that it not conduct such work without reimbursement at 100 percent. Such a provision would also allow agencies the time to comply with such additional costs, as NTIA would not collect associated fees until October 1, 2001. We can improve in this area—we must ensure that NTIA is reimbursed by other federal agencies at a rate of 100 percent for spectrum allocated. It is not fair for NTIA to subsidize other government entities at rates of up to 20 percent.

We should also encourage the use of spectrum provided by the private sector or commercially available service providers by government entities if appropriate and less costly. At the same time, we must also promote fair and competitive opportunities for businesses competing with government for spectrum services. I hope to learn more on this issue from Mr. Jim Rogers of UPS here today.

With improvements made in these areas, increased funds will allow NTIA to better able perform its overall responsibilities of spectrum management, informative telecommunications policy, development of a national telecommunications and information infrastructure, and performance of research in telecommunications sciences.

Once again, thank you, Mr. Chairman, for drawing your attention to this issue. I look forward to the testimony from our witnesses as well as to working with the committee on reauthorizing a forward-looking and efficient NTIA for the 21st century.

Mr. TAUZIN. And the Chair is now pleased to introduce the panel. As is usually the case, we try to have a large panel, for two reasons: One, nobody sits around here for the second panel, and so we try to get it in on the first panel and the Chair ends up by himself with the second panel. So I decided to punish all my members by making them sit through the first panel, but they didn't show up to be punished.

The second thing is that it gives us an opportunity to have an exchange among you, and I want to encourage you in that regard. As I introduce you, let me ask you, please, to remember that your written statements are part of the record so you don't need to read us a statement. I wish you would engage us in a conversation, perhaps engage each other in a conversation, and challenge each other to comment as we go through so we can get a full educational experience today.

Larry, you are an old friend of mine and this committee, I echo the comments of Mr. Dingell. I have always had great confidence in you personally and the way you have conducted your agency. There is no hostility here. Please know that. The bill is a draft bill, and the idea of leaving out the grant programs was designed for you to come in and prove to us that they ought to be added and how they might be reformed to make them better. So it is with that approach that we welcome you to the committee.

Again, let me introduce The Honorable Larry Irving, Assistant Secretary for Communications Information; Mr. George Ross, Assistant Inspector General for Auditing, representing the Department of Commerce; Colonel Richard Skinner, the Assistant Deputy Secretary of Defense for Space and ISR Programs; Mr. Harris Miller, President, Information Technology Association of America; Mr.

Jim Rogers, Retired Representative of the United Parcel Service; and Mr. Kenneth Crawford, Director, Oklahoma Climatological Survey, University of Oklahoma.

I suspect that we will learn a lot, and I invite you to present your testimony. We recognize first Mr. Irving.

STATEMENTS OF HON. LARRY IRVING, ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION; GEORGE E. ROSS, ASSISTANT INSPECTOR GENERAL FOR AUDITING, DEPARTMENT OF COMMERCE; COLONEL RICHARD W. SKINNER, ASSISTANT DEPUTY SECRETARY OF DEFENSE, SPACE AND ISR PROGRAMS, DEPARTMENT OF DEFENSE; HARRIS MILLER, PRESIDENT, INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA; JAMES A. ROGERS, RETIRED REPRESENTATIVE, UNITED PARCEL SERVICE; AND KENNETH C. CRAWFORD, DIRECTOR, OKLAHOMA CLIMATOLOGICAL SURVEY, UNIVERSITY OF OKLAHOMA

Mr. IRVING. Thank you, Mr. Chairman. Let me thank you and members of the subcommittee for holding this important hearing. Having served as Assistant Secretary for NTIA for the last 6 years, I have seen our role continue to evolve. As telecommunications becomes more and more important, information technology becomes more and more important.

Just last week, Alan Greenspan stated that technological innovation is responsible for the Nation's phenomenal economic performance—and that is his word. Mr. Greenspan noted that the newest innovations which we label information technologies are beginning to alter the manner in which we do business and create value, often in ways not readily foreseeable even 5 years ago. And having served in this job for 6 years, I can tell you almost nothing I am doing today did I think I would be doing 5 years ago.

The reality is information technologies and telecommunications represent $1 trillion of the $7 trillion economy. One-seventh of our national economy is telecommunications information technology. Our expertise in information and telecommunications sectors are helping resolve critical questions of our global economy. We are trying every day to do more with less.

In addition to the daily functions that NTIA has, we have taken a new function over the past year. We are working actively across the administration on electronic commerce issues, issues such as domain names, on-line privacy content, how to get more broadband access built out. We cosponsored international telecommunications summits, including the Latin American Telecom Summit and the China-U.S. Telecom Summit where U.S. industry had a chance to meet with Chinese and Latin American officials to talk about opening up those markets.

We served a lead role at the International Telecommunications Conference and at the Plenipotentiary Conference in Minneapolis. And thank you for your support of the ITU Plenipotentiary.

We are taking the lead, pursuant to the President's directive, on the Critical Infrastructure Protection Initiative. Just as Y2K threatens problems for our Nation's economy, so do attacks on our Nation's telecommunications information infrastructure. We are very dependent upon them.

And that is just the beginning of all of the things that we have to do. We are pleased that this committee and other congressional committees have asked NTIA to conduct five or more studies, and also to staff the congressionally appointed Children's On-line Protection Commission within the next year. Pending legislation would give us responsibility for three more studies.

And at the same time as our responsibilities are mounting, our staffing levels have been decreasing. Since 1994, we have gone from 361 full-time employees to 267, more than a one-fourth decrease. And in our fiscal year 2000 budget, we sought an increase in our staffing levels in a budget of $17.2 million, primarily because of Critical Infrastructure Initiatives and to help public broadcasters as they move over to digital television.

Let me turn to our concerns with the discussion draft. First, the funding level of $7.9 million is well below the $17.2 million requested and would not provide, we believe, the funds for new initiatives or programs such as the staffing for the CIP program or the Children On-Line Protection Act Commission.

My second concern is the privatization of the lab. We believe that would eliminate a critical Federal resource. There is unparalleled expertise in these laboratories supporting NTIA's spectrum management and telecommunications functions. It provides our office spectrum management and those we serve in that office with critical research expertise and it conducts research for many other Federal agencies. My concern is if you get rid of NTIA's labs, the people we support will go out and create their own duplicative labs, and in many instances, because security clearance is needed and specific subject matter expertise, there are not private labs to do this job.

The laboratory recently helped this committee with regard to the Satellite Home Viewers Act. There was no independent lab that wasn't doing similar work for someone who had a vested, commercial interest in how the SHVA turned out.

We have also assisted the FCC as they were doing digital television. Again, because of the impartial interest of those labs, we were able to give an objective view, and those labs are cost efficient. We follow the Economy Act, and we only charge for costs incurred. If the lab were privatized, Federal agency users would either increase their research budgets or pay higher rates to private businesses. No savings to the taxpayer; and, moreover, there are very few assets to be sold. Most of the assets are the tremendous human resources in those labs. We have very few physical resources that can be sold to a private sector entity.

For those reasons, external and internal reviews have concluded that NTIA's labs satisfy a compelling need for a centralized, cost-effective, unbiased Federal facility.

Mr. Chairman, I have three studies dating back to Dave Markey and Al Sikes that I would like to present the committee with regard to privatization initiatives that preceded me.

[The information follows:]

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Communications and Information
Washington, D.C. 20230

September 30, 1987

MEMORANDUM FOR The Deputy Secretary

FROM: Alfred C. Sikes

SUBJECT: Institute for Telecommunication Sciences

Attached is the copy you requested of our study of the Institute for Telecommunication Sciences (ITS). The report is based on extensive discussions with ITS management and staff, other members of NTIA and the Department of Commerce, and Federal agencies for whom ITS performs work . On the basis of our review, it is our conclusion that ITS is an organization that performs valuable work and is an important part of NTIA. ITS is recognized in the telecommunications community as a significant source of national telecommunications expertise that carries out its functions in an unbiased fashion. Additionally, it provides critical support to NTIA's communications policy and spectrum management roles. In short, ITS is a small but capable laboratory, performing an important, limited role in the national interest. The report does contain some specific suggestions on how ITS might be strengthened and its role better understood.

Evaluation. Our review revealed a strong need for the existence of a Federal laboratory devoted to telecommunications research. The Federal Government is an extensive user of the radio frequency spectrum and ITS performs important roles within the Federal Government, both in supporting NTIA in its spectrum management function and assisting other Federal agencies in solving their specialized telecommunications problems. Additionally, as the importance of telecommunications has grown, we have increasingly recognized the need for a laboratory to provide the basic technical underpinnings for communications policy recommendations. Policy cannot be made in a vacuum and it is essential that these resources be available to the Administration's communications policymakers. Finally, there is a need for a center for telecommunications research, in keeping with the Federal responsibility to promote scientific breakthroughs. ITS performs these roles well and is an integral contributor to the synergies that arise from the interaction of spectrum management, communications policy and telecommunications research. In short, to quote a 1971 study, the ITS laboratory's role is such that "if it did not exist, it would have to be invented."

Performance. Our review also found that ITS performs its important functions very well. We identified five principal areas where ITS has significant responsibility.

- Spectrum Management. ITS performs support work for NTIA's Office of Spectrum Management (OSM), in its role managing Federal use of the spectrum. ITS annually performs spectrum resource assessments (SRAs) critical to planning for long-term spectrum use. Additionally, ITS manages and deploys a highly sophisticated spectrum measurement van for use in evaluating spectrum usage and interference questions throughout the United States. The van was developed by ITS and is the best resource available to the Federal Government in this area.

- Communications Policy. ITS has provided scientific support for numerous NTIA policy initiatives. Particularly noteworthy has been their support for NTIA's international conference work. ITS' contributions to the recent high frequency conference were decisive in achievement of United States objectives. ITS has also provided critical support for other NTIA projects such as analyses of the future of AM stereo, common carrier regulation, and the Minority Telecommunications Development Program.

- Other Agency Work. ITS performs telecommunications studies for other Federal agencies on a contract basis. This accounted for approximately 60 percent of ITS' workload in the fiscal year just ended. In 1983, Network Strategies, Inc. (NSI) conducted a review of ITS and its other agency work. The NSI study found that over 90 percent of ITS' other agency work was appropriate and supportive of NTIA's overall mission. Additionally, NSI found that ITS undertook and performed this work in a manner that did not compete improperly with alternative private sector sources. Overall, the NSI study was supportive of ITS and how it performs its work. The suggestions made for improvement were relatively minor and were implemented. Additionally, our own review involved interviewing several of ITS' client agencies. ITS work received uniform high praise for its quality, timeliness and unbiased nature. We concur with this view and agree that ITS' other agency-supported work is supportive of the NTIA mission.

- Standards Work. ITS is active in the area of international and domestic telecommunications standards development and is a recognized source of American telecommunications standards expertise. It is not the only player in the development of these standards, but it does provide expert contributions and support to others designated primarily responsible for various telecommunications standards. ITS' role in the domestic standards area has been funded by the National Communications System (NCS) for work on Federal standards and by the defense agencies for development of military telecommunications standards. ITS also is an active participant in the development of international telecommunications standards (CCITT). Even though this work is funded largely through other agency sources, some level of involvement is required from NTIA's policy perspective as well. This is particularly true in the post AT&T divestiture era where both domestic and international standards have become increasingly critical in the telecommunications and trade policy areas.

- Research. ITS performs independent research in the telecommunications sciences in critical areas not being fully explored by the private sector. It has concentrated its resources in the development of millimeter wave technology and in satellite communications technology. Millimeter waves represent a relatively unused portion of the radio spectrum which is becoming more valuable as demand for existing spectrum increases. While work performed by ITS is recognized as of high quality, such research is the area which has been substantially cut back in the Gramm-Rudman environment. ITS could undertake additional research or continue at its current level. It would not be advisable for research performed at ITS to be reduced further, however, as it is now at a minimum level. This concern has been recognized by NTIA over the last several years as the agency has consistently sought additional funds for an ITS core research capability. These proposals have been turned down at the OMB or Department level, however. The tangible benefits provided by basic research are hard to anticipate, measure and plan for. It is noteworthy, however, that as the ITS funded research has decreased, so have the numbers of significant breakthroughs coming out of the ITS lab. Additionally, there has been concern expressed that work in such areas as millimeter waves might be duplicated by other Federal laboratories. We found

that this was not the case and that other labs working in millimeter waves are evaluating distinctly different applications of this technology and are not duplicative.

Overall, we found a record of capable and valuable performance by ITS.

Organizational Issues. The Department asked us for our assessment of whether ITS fits within NTIA or whether it might fit more appropriately within other groups within the Department. Our conclusion is that ITS is appropriately located within NTIA, but more so, that depriving NTIA of an independent scientific research capacity would have serious adverse consequences.

As stated above, the ITS fit within NTIA is a natural one. The combination of spectrum management, communications policy, and telecommunications research is logical and, as the report documents, produces important synergies. But the combination represents not only the potential for synergy, but what amounts to a strategic necessity for the successful performance of each of these functions. Both the spectrum management and policy functions require regular and immediate access to scientific resources. Additionally, the communications area has long been recognized as important to the national interest and requiring an independent organizational voice within Government. This importance is growing, not lessening, with the passage of time. Developments in science as well as regulatory developments such as the AT&T breakup, have made the existence of a high level, broadly capable Executive branch organization charged with focusing national telecommunications policy essential.

As to whether ITS might be more appropriately located in other areas of the Department, such as NOAA or NBS, the ITS mission is significantly broader than and distinct from issues relating to oceanographic and atmospheric research or standards work. This is particularly true regarding NBS, where ITS originated. NBS has a tradition of creating new areas of knowledge which are later spun off as the area develops and becomes important unto itself. In this regard, it is relevant to note that NOAA also began as part of NBS. Additionally, we found no other Federal department or agency which might more appropriately house ITS. Only the Federal Communications Commission functions in the same direct area, and it is in part the FCC's status as an independent regulatory agency that gave rise to the need for NTIA in the Executive Branch.

Recommendations. Our review of ITS has produced three principal recommendations on how ITS' performance might be strengthened.

- Research. Our review has reaffirmed the desirability of increasing ITS' funding for research. Again, while budgetary restrictions might make this impractical, we feel additional funding would produce valuable scientific benefits and positive spillover to the spectrum management and communications policy areas. Additionally, we think it is very important that funding of ITS' telecommunications research not decrease below its current level. We recognize that research does not produce easily predictable or measurable results, but our experience suggests that additional resources would pay off with significant additional benefits. We believe this is particularly likely given ITS' reputation for quality work. We recommended that the ITS' core research budget be increased by $500,000.

- Advisory Committee. We further recommend that NTIA establish a laboratory advisory committee consisting of recognized experts working outside the lab to develop new research projects benefiting the national interest.

- Organizational. ITS is appropriately located as part of NTIA and should remain within that organization. Telecommunications is an important, independent area requiring its own organizational voice within the Executive branch and an internal laboratory is an essential element of such an organization.

FORM CD-183
(REV 2-82)
FORMERLY SEC-35

U.S. DEPARTMENT OF COMMERCE

ABSTRACT OF SECRETARIAL CORRESPONDENCE

TO: The Secretary | X The Deputy Secretary

Date: June 15, 1983

From: David J. Markey
Assistant Secretary-designate

Subject: Review of the Institute for Telecommunication Sciences

Introduction

Curtailing unnecessary Government competition with the private sector has been an important aspect of NTIA's efforts for several years. We opposed the ongoing div-rsification of the U.S. Postal Service into the "electronic mail" and comparable expansion of the Federal Reserve Board's "electronic banking" services, for example. In 1982 Mr. Wunder testified before a House Government Operations subcommittee and indicated a review was underway of existing and planned Government "information services" (e.g., computer libraries) competitive with private sector offerings. Given these efforts, in 1982 NTIA commissioned a review of the "other agency" activities of its own Institut for Telecommunication Sciences (ITS) to determine whether it was performing tasks under contract with other Federal agencies that should more appropriately be undertaken by the private sector. As you know from your leadership of the recent review of the Department's telecommunications and computer-data processing programs, ITS performs both critical support tasks essential to our radio frequency management and international conference work and tasks ostensibly comparable to those of private engineering companies for other Federal agencies, chiefly Defense agencies.

ITS and Related Program Reviews

Support of our review of ITS activities was secured through contract with Network Strategies, Inc. (NSI). NSI was assigned the task of reviewing all ITS projects (some 300 in number) over the 1980-82 time frame and making a preliminary assessment whether "all services provided to other agencies by ITS are unique to Federal Government

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responsibilities or whether some of these services should be provided by the private sector. The details of the NSI contract are set forth in an attachment to this memorandum.

The contractor's principal conclusions were, first, that those ITS activities related to radio spectrum management and utilization are fully justified as a means of sustaining an R & D "core capability" in support of NTIA's statutory role to manage Government's spectrum use. Providing expert assistance to agencies in designing their radio communications systems, for example, as ITS does, directly supports NTIA's statutory function. Second, before using ITS' expert capabilities, other agencies do determine whether reliance on the Government is appropriate for national defense, cost, or other sound reasons. Some projects were identified where reliance on the private sector might have been feasible. Of some 300 projects reviewed, 23 were found to involve providing technical support for routine procurement and installation, ITS, however, commendably has undertaken sharply to reduce such efforts unilaterally. Hence at present only three agency contract efforts are still underway that arguably involve competition with the private sector.

Conclusion

My review of the NSI contract report and related internal informatic indicates that ITS plays a central role in supporting our international radio conference and domestic spectrum management responsibilities. Any difficulties that arose in the past concerni the scope of ITS' "other agency" activities appear to have been resolved.

Attachment

Attachment A

OVERVIEW OF NSI STUDY

NTIA has undertaken a recent review of the Institute for Telecommunication Sciences (ITS) to determine whether "all services provided to other agencies by ITS are unique to Federal Government responsibilities or whether some of these services should be provided by the private sector. This topic is one of NTIA's Strategic Planning Objectives being tracked at the Department level. The review was performed under contract by Network Strategies, Inc. (NSI).

The study was structured via a task-oriented approach and included the following items:

- A review of applicable Executive Branch policies,
- A review of the basis for ITS charges,
- Determination of the perspectives of ITS management,
- Characterization of ITS activities for a 2-3 year time period,
- Determination of the sponsor's perspectives on why and how ITS is selected, and
- Analysis of courses of action NTIA could take for dealing with ITS activities that may appear to compete unfairly with the private sector.

The principal conclusions of the report, drawn directly from the NSI Executive Summary were:

- Some ITS activities, particularly those related to the management and utilization of the radio frequency spectrum, are justified as an R&D core capability supporting a Government function.
- To use ITS capabilities, other agencies should first ascertain that there is no satisfactory commercial source available, that the use of ITS is justified by one of the national defense exceptions, or that ITS costs are lower based on comparison with competitive proposals from commercial sources.

The following specific insights are provided:

- o Appropriateness of ITS Functions as a Federal R&D Core Laboratory in Telecommunications.

  The overall view of the NSI report was a generally favorable one for ITS, recognizing the validity and essentiality of ITS major program efforts in radio frequency spectrum-related work. ITS currently maintains a small core applied research and engineering capability in EM propagation measurement and modeling, spectrum engineering, and related efforts to enhance NTIA's spectrum management responsibilities. NSI also concluded that ITS should maintain a measure of in-house technical capability in systems development and evaluation efforts to contribute to maintaining the quality of that resource, (which) could be justified regardless of the existence of private sector capabilities. ITS presently applies limited resources toward technical leadership and participation in international conference preparations (e.g., ITU, ISD) to support international standard setting. These efforts ultimately facilitate U.S. trade opportunities in the international marketplace.

- o Use of ITS Capabilities by Other Federal Agencies--Fairness with the Private Sector.

  NSI states that other agencies contract through ITS for a variety of reasons. The reasons range from expediency, perceptions of lower cost and expert reputation, satisfaction with ITS' prior performance, and up-to-date knowledge of the agency's program plans. Their overriding view, however, is that some of ITS' indirectly supported activities can be done by the private sector. In particular, they cite activities related to the planning and design of networks, systems planning, design, and development, and procurement and installation related support as being areas where private sector capability exists today to accomplish these tasks.

It should be noted here that the work ITS does for other Federal agencies derives its legal authorities from 15 U.S.C. 272(3) Advisory Services to Government Agencies on Scientific and Technical Problems" and 15 U.S.C. 272(f) "Invention and Development of Devices to Serve Special Needs of

Government." As a matter of Federal policy, ITS does not accept work, more appropriately done by other non-Government or Government organizations. It is also a matter of policy that all sponsored work reinforce NTIA's overall program and that it be clear that other agencies, industries, or universities could not serve equally well or better. As such, ITS provides a cost-effective resource in its areas of competence which does not require duplication throughout many federal agencies.

Given the scope of the ITS program in support of NTIA and other Federal agencies, these sorts of capabilities that directly support and are critical to NTIA policy development, maintenance and enhancement of ITS technical competence , and that are in direct, cost-effective, support of mission agencies, are appropriate for ITS to pursue.

ITS does, and will continue to, review project proposals to assure that there is no potential for unfair competition with the private sector. The types of technical areas that are most prone to opportunities for unfair competition, e.g., support for procurement and installation, already have been reduced from twenty-three projects during the time period of the study, to three today. Also procedures are in place to ensure that the Director, ITS continues to adhere to the strict criteria already established by the Institute which precludes any opportunities for unfair competition.

- Options for Changing the Focus of ITS Activities.

  NSI preferred several options for restricting ITS involvement in those areas where possible competition with the private sector might exist. Included in this discussion, NSI suggested:

- Various possible levels of program restriction based upon the technical content and purpose of the work being accomplished by ITS. These alternatives were based upon a matrix analysis performed by NSI which broke out spectrum vs. systems projects against the research vis-a-vis applied engineering efforts of the Institute. NSI's principal concern was with the aforementioned ITS work in systems related activities where further structures might be imposed.

- Decreasing user agencies' ease of access to ITS as a source of technical competence in deference to private sector opportunities. This would

include formal competitive offerings (direct competition with the private sector), more rigorous cost comparisons for services to be rendered, and certification by the procuring agency that no competitor expressed an interest in bidding against ITS for the work, or that it selected ITS as the winning bidder in a competition.

Based upon relevant OMB policy guidance on Federal procurement practices and applicable regulations, the current ITS procedure is adequate. Further, a number of program changes at ITS have already been affected internally that are in direct agreement with NSI proposals. These include increased emphasis in international technical standards activities supporting Commerce's more recent initiatives in international trade. The effect of the changes already made, along with a recent streamlining of ITS organizational structure, will tend to strengthen ITS' role within existing Departmental Orders.

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and
Information Administration
Washington, D.C. 20230

OCT 12 1988

MEMORANDUM FOR Charles Schott
Dennis Connors

FROM: Sarah Maloney, Sarah Maloney
Budget Officer

SUBJECT: ITS Planning and Financial Management Analysis

During the past two years, ITS has been the subject of two major reviews. The first was a Departmental study which focused on ITS' role within the Department of Commerce and the second is an NTIA review of the planning and financial management systems in place at the laboratory. The Departmental study was conducted in the summer of 1987 and concluded that the ITS programs were necessary, non-duplicative of other Departmental programs, and served a great National need.

Once this report was completed, NTIA decided that it would be appropriate to review the planning and financial management aspects of ITS. I proceeded to undertake a thorough study of the ITS planning and financial management systems. It was hoped that through this process data would become available to NTIA Senior Management that would assist in making strategic management decisions. Decisions -- as to which research projects should be pursued and when, how much should be allocated to the laboratory, and what the appropriate mix of other agency funding should be -- could be enhanced by better management information provided to Senior levels.

The first realization that I came to was that the laboratory had an extensive management information system but that it was very much internally directed and focused. Designed for internal management review and use at the laboratory, the current system facilitates day-to-day decisions by providing very detailed information for the line offices who depend on knowing where they stand on a pay period by pay period basis.

The planning and financial information requested from ITS by NTIA Washington is usually in response to our need for allocation information, for Commerce planning documents and for MBO requirements. Our strategic analysis outside of these requirements is usually limited to a specific area such as ITS involvement in High Definition Television or millimeter wave technology. Seldom has there been a consideration of the overall strategic needs of ITS.

As the need for strategic information became more apparent, we began to request more detailed information. The last two years have seen an increasingly closer relationship with ITS. OPCM now regularly receives data from ITS on:

a) detailed project plans for both direct and all other agency funded efforts

b) monthly summary data on other agency efforts (identifying New Projects Initiated, Significant Project Developments, and Projects Completed)

c) monthly financial forecasts identifying the other agency efforts ITS is planning on receiving during the fiscal year

d) detailed financial transaction information by pay period

In addition, Departmental as well as NTIA's management attention is focused on the value of ITS' other agency efforts through the Departmental Management-by-Objectives process which now includes the other agency efforts.

The attached report presents the information reviewed during my analysis of ITS' planning and financial management systems.

Conclusions

ITS' planning and financial management system fulfills the needs of the laboratory personnel. Extensive financial and project information is available at the laboratory and ITS has worked with OPCM to develop reports which meet agency requirements.

The laboratory accepts other agency efforts when those efforts will contribute to the telecommunications research goals of NTIA without involving competition with the private sector. Although ITS' management has identified a number of research areas where ITS will require basic capabilities for the future, within the limited direct funds and personnel resources available they have not specifically targeted any areas where other agency support should be pursued.

This activity — planning and targeting specific research areas for the future — requires the leadership of NTIA's Senior Management.

Recommendations

The interest in ITS' activities has led to higher visibility of both the direct and reimbursable activities at ITS and a greater understanding in Washington of the current activities at the laboratory and how these activities fit with the policy and spectrum management programs. Two recommendations can help to further these benefits:

1) Ensure ITS continues to provide detailed information to OPCM and for use by budget, policy, and management staffs

This information -- consisting of detailed project plans, monthly activity reports on both direct and other agency efforts, monthly financial forecasts, and detailed financial transactions -- has proven valuable to OPCM and should be readily available to OPCM staff members.

2) Establish a process to provide leadership in the planning and targeting of future research activities

As the final step in the review of ITS, NTIA's senior management should take a leadership role in the planning and targeting of future research areas. Rather than a one-time effort, this role should be visible through an on-going process within the agency. It will involve a determination of the telecommunications research expertise necessary for the future, including an assessment of:

- the research environment, both public and private sector
- NTIA's telecommunication policy responsibilities and activities which seem likely for the future
- NTIA's Federal spectrum management responsibilities; i.e., as demands for spectrum increase, what capabilities can be utilized by both the Government and the private sector to increase efficiency and effectiveness

I recommend that NTIA's Chief Scientist and the Director of the Office of Policy, Coordination and Management -- acting with the Deputy Assistant Secretary's guidance -- be assigned to prepare an annual evaluation of the telecommunication research activities for the future. They should be free to call upon the expertise of Dr. Utlaut and all Associate Administrators, as necessary. The evaluation should include an assessment of other agencies either involved in or likely to support research in these areas. This matching of areas where future capabilities need to be developed with the possible needs of other agencies will be a priority.

Once the future objectives are determined and approved by the Assistant Secretary, ITS should be directed to pursue other agency efforts in these areas.

Attachment

Mr. IRVING. A third concern that I would like to raise is that it doesn't authorize TIIAP. That is a merit-based, competitive matching grant program that disadvantaged communities across this Nation are taking advantage of. We are doing things in health care, public safety and delivering of better public services, and I don't make decisions in Washington except as to what should be funded.

What particular grants come to us, those are locally driven. There is tremendous national interest in this program. We have 14 applicants for every one that we fund, and today you will hear from Oklahoma about how this grant saved lives just last week in Oklahoma across that State.

I have worked with Congressman Upton on projects in Kalamazoo and I remember speaking over a teleconference when that grant was awarded. We have worked closely with you, Mr. Chairman, with regard to Nicholls State. We talk about connecting schools and libraries; what about those men and women who work on oil rigs who need further education? TIIAP has provided educational facilities, and is doing things with health care in the State of Louisiana.

Today, Mr. Chairman, there is a front page USA Today article on one of our grant programs. It is talking about parents adopting on-line. Four years ago, 5 years, NTIA gave a grant, and there is a fuller story in the inside section, about adoptions on-line.

[The article follows:]

[USA TODAY]

ONLINE ADOPTION SITES FORGE UNLIKELY LINKS

By Marilyn Elias

They were hardly members of the Most Likely to Be Adopted club. In fact, if it hadn't been for the Internet, they might never have found homes.

Six-year-old Abel had been kicked out of Head Start for aggression. His foster parents said he shredded curtains in fits of fury, and he still was not toilet-trained.

Joshua had attempted suicide by age 7. Social workers described him as aggressive, probably retarded.

Breauna, 14, survived severe abuse from parents said to be in a satanic cult. Her social worker doubted any family would adopt her. She'd soon start on an "independent living" track, preparing to live on her own at 18 with Social Security payments for those with disabilities.

But all three youngsters were adopted by American families in the past few years. And after some bumps along the way, all three appear to be thriving in their new homes.

Abel, Josh and Breauna joined families in other states who saw their photos and personal profiles on the Internet.

Net listings first appeared in 1995 with a few dozen hard-to-place kids shown on a Web site established by the National Adoption Center and Children Awaiting Parents, two national agencies that find adoptive homes. Now there are 1,600 youngsters at the site, largest in the USA.

Thirty-seven states have created sites since 1995, typically listing children they've been unable to place locally. Last month, the federal government announced plans to create a Web site by 2001 for all U.S. kids awaiting homes through public agencies.

"The Net is the best tool we have," says Carolyn Johnson, executive director of the National Adoption Center. Many youngsters adopted from FACES, the center's site, "weren't likely to have ever found homes," she says.

The Net's capacity to dissolve state lines instantly, linking children to prospective parents everywhere in the USA, could make it a key asset for meeting the challenges ahead, says Carol Williams of the Children's Bureau at the U.S. Department of Health and Human Services.

About 8,000 U.S. youngsters now need adoptive homes. But that number could double or triple in the next two years, Williams says. A 1997 federal law shortened

the time kids can remain in foster care without plans for a permanent home. As youngsters become available more rapidly, the need for families is expected to grow, and so must the pool of prospective parents.

The new government site will not deliver adoption nirvana for parents seeking a pink-faced infant, Williams cautions. The vast majority of youngsters shown online will be over 3 years old. Many will have disabilities—physical, intellectual or emotional. Some will be part of package-deal sibling groups. A significant number will be racial minorities, Williams says. But the site will improve the chances that these difficult-to-place children will find parents who want them.

Instant access to children's photos and profiles through computers doesn't mean instant adoption, experts emphasize. It's not like ordering books from Amazon.com.

Just as in traditional placements, parents must have a home study done by an agency in their state to ensure they can provide a safe, healthy environment. The child's social worker then considers whether the family would meet his needs.

Texas, the largest state site, with 532 kids shown, started offering short video downloads in March. An adorable 3-year-old shows she can sing her ABCs. Other kids tell about their interests. "It humanizes children, especially those with disabilities," says Ella Zamora of the Texas Adoption Resource Exchange.

"When you see that child's face and hear her voice, you may decide you don't want to adopt a kid like that. But sometimes people have stereotypes—a child with cerebral palsy is a certain way—and when you see the child, you realize your perceptions were not true."

Texas adoptions increased in fiscal 1997-98 by 76% from the average for the three previous years. It was among the largest rises of any state, "and the Internet was an important factor in that," Zamora says. Inquiries soared from 1,100 in 1996 to 9,555 in 1998, "and the big jump came from families looking on the Net."

For Illinois children, Net outreach has helped place brother/sister groups, including three black siblings recently adopted by a Virginia family, says Marilyn Panichi at the Adoption Information Center of Illinois.

Families adopting through the Net typically visit a child several times, including overnight and longer visits, and the child might visit in the family's home before the decision to adopt is made.

Social workers sometimes prefer that their adoptable kids stay in-state.

This resistance to letting go of children is among the areas that need work at the state level before the federal Web site goes up, says Williams of the federal Children's Bureau. More social workers will be needed, too, as family inquiries increase, and costs will be shared by the federal and state governments, she says.

Some critics see the most serious drawback of using the Internet to expand special-needs adoptions not in the Net itself, but in human failure to inform adoptive parents about what they'll face when they adopt older children or those with disabilities.

Candor about the extent of kids' problems has increased the past 20 years. But, concedes Williams, "full disclosure is something we continue to work toward. Most state agencies expect their staffs to provide full disclosure, but it continues to be a concern."

Sometimes children don't even tell all that's happened to them until they've been in a safe adoptive home for years.

In other cases, the travails and placements are so labyrinthine that the child is already adopted by the time a state's bureaucratic machinery untangles and presents the long story of the child's life.

That's what happened to Jim and Heide Thatcher of Pleasant Grove, Utah. They adopted 14-year-old Breauna, severely abused by parents said to be in a satanic cult. Records of her last four years were readily available. But Breauna had been in the Thatchers' home for more than three months before they received her full file.

"They had tried to describe the extent of her abuse. But you go in so optimistic, thinking you can handle anything," Heide Thatcher says. Breauna even had a court-appointed advocate who kept asking the Thatchers if they were sure they could handle the teen.

As it turns out, they almost couldn't. Breauna wrestled with bipolar disorder, took up with a bad crowd and even attempted suicide. But with the Thatchers' help, she has turned a corner. Now she's a college-bound 10th-grader with better than a B average who says her friends are "preppies."

Sometimes adoptive parents feel they were fully informed but still faced crucial challenges. Laurie and Jon LeBar of Hot Springs, S.D., found 6-year-old Abel from Texas and 7-year-old Joshua from Illinois on the FACES site. They had to persist in teaching both boys to talk out their anger rather than harm themselves or others.

But both were receptive, and two years after adoption they're happy, amazingly well-adjusted kids, Laurie says. The LeBars have adopted several other youngsters

of varied races through their initial Net contact. "I don't regret it a bit; they're a joy," Laurie says. "We are really living our dream. We've got a big house out in the country, and we've got this great multicultural family. It's awesome."

To increase these Net-initiated adoptions will cost the government more upfront. The federal Web site alone is expected to cost $1.5 million to set up, then $1.25 million a year to run, though HHS hopes for private contributions.

"You're either going to pay now or pay later," says Ann Sullivan, adoption program director at the Child Welfare League of America.

Youngsters in serial foster care fare poorly as adults in terms of mental health, education and employment. About 20,000 U.S. youngsters a year turn 18 without having been adopted. "We don't talk about (adoption) costs. We talk about investment."

And there's something besides dollar signs to consider in launching Internet recruitment sites.

"Ethically and morally, the state is the parent of these children," Sullivan says. "I don't see how we can do less than everything possible to find good homes for them."

Mr. TAUZIN. How did you manage that?

Mr. IRVING. We have good public affairs people. Ken Johnson has been helping me out.

But the amazing thing is that over 5 years we have been able to do things. We talk about the critical need to make sure that parents know about adoption opportunities and adopting children are known across this country; we do that on-line with a small, less than $200,000 grant. You will hear about other important grant proposals.

And just today, I picked up an e-mail, noting while we are getting lots of awards nationally, we are getting international acclaim. The Bangemann Awards has a TIIAP grantee, the Erickson Awards has a TIIAP grantee as nominees. I know that I have got to finish up.

We are working closely with the Department's Office of Inspector General to make these grant programs better, more efficient and run better.

I also want to talk about the spectrum management. The 80/20 split in our estimation is the correct split, and the reason is that it does not make me a wholly owned subsidiary of my clients. By having the 20 percent that the taxpayer pays—many times I am fighting the Department of Defense, fighting Transportation or Interior over a decision that I have to make. When somebody pays your bills, they believe they have a lot more influence over your decisionmaking process, and we never want to get to a fully 100 percent our clients are paying our bill.

But the second important issue is by the time the appropriations process starts in October and Defense gets their money and gives it to us, there is a timing problem. That 20 percent ensures that we can continue doing the things that we need to do in our agency while we are waiting for the checks to be cut at Defense, Coast Guard, and Interior and other places across the administration.

Those are my primary concerns, Mr. Chairman, but we look forward to talking to you. I appreciate again your holding this hearing this afternoon.

[The prepared statement of Hon. Larry Irving follows:]

PREPARED STATEMENT OF HON. LARRY IRVING, ASSISTANT SECRETARY FOR COMMUNICATIONS AND INFORMATION, NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

Mr. Chairman and Members of the Committee: Thank you for this opportunity to testify today on the reauthorization of the Department of Commerce's National Telecommunications and Information Administration (NTIA).

Today, I would like to describe NTIA's unique role in developing and advocating policy in the telecommunications and information technology sectors; summarize our FY 2000 Budget Request; and highlight our key programs and initiatives. I have also attached to my testimony two appendices. The first is NTIA's Comments on the Discussion Draft "NTIA Reauthorization Act of 1999." The second is a list of Recent Congressional Studies for NTIA and Potential Studies Proposed by Congress.

INTRODUCTION

NTIA's Unique Role

NTIA is the principal adviser on telecommunications and information policy issues in the Executive Branch. In this role, NTIA helps develop and present the Administration's position on these issues before the Federal Communications Commission (FCC) and other domestic and international fora. NTIA's goal is to assist the Administration and Secretary of Commerce William M. Daley in promoting the role of the nation's telecommunications and information industries by creating more job opportunities, enhancing U.S. competitiveness in the global economy, and ensuring that all Americans benefit from the digital age.

NTIA is unique among Federal government agencies. The agency's expertise encompasses every aspect of telecommunications and information technology. In addition to advocating the Administration's positions on domestic and international issues, we also manage the Federal use of the spectrum; resolve complex technical issues through cutting-edge research in our laboratories; administer infrastructure grants to promote the development of a widely accessible information infrastructure; and manage grants to help public broadcasting maintain their infrastructure and transition to the digital age.

NTIA's role in these areas is more important than ever, given the ever-increasing significance of the telecommunications and information technology (IT) sectors to our nation. Today, these technologies are driving this country's economic growth. The White House Council of Economic Advisors recently determined that revenues of communications services and equipment companies rose over 60 percent in the last five years. Over a third of real domestic product growth in the past three years has come from IT industries. More than 7 million people are now employed by IT industries and earn wages that are almost two-thirds higher than the average for all private sector jobs. And, investments in new technologies—including computers, satellites, wireless devices, and information processing systems—account for over 45 percent of total real business equipment investment.

New technologies will shape our economy even more significantly in the 21st century, particularly with the growth of the Internet and electronic commerce. Today, some 160 million worldwide are going online to shop, invest, trade, and e-mail, according to Nua Internet Surveys. That figure is expected to increase to 320 million by the end of next year. As more people and businesses connect online, the "virtual marketplace" will become commonplace. Electronic commerce among businesses is expected to grow more than fifteen-fold in the next few years, from $64 billion in 1999 to $980 billion in 2003, according to International Data Corporation analysts.

The heightened importance of the telecommunications and information sectors has engendered new and pressing policy development and advocacy needs. NTIA is using its expertise, leadership, and vision to address these urgent new questions.

In order to sustain the rapid development of our information infrastructure, NTIA is considering ways to promote the deployment of high-speed broadband networks, and to insure that information and telecommunications services are available and affordable for all Americans. We are facilitating the development of electronic commerce ("e-commerce") by addressing new questions of consumer privacy, security, and domain name management. We are also working with other nations to promote a market-driven, flexible and decentralized, and technology-neutral approach to e-commerce policy. And, we are coordinating efforts under the federal Critical Infrastructure Protection (CIP) plan to ensure that our telecommunications and information infrastructures are secured against physical and cyber attacks.

NTIA's management of the federal use of radio spectrum is also promoting public safety and competition. As the managers of federal spectrum, we are trying to improve efficiency, increase private access to spectrum resources, and plan for future

spectrum needs, including those relating to public safety. These goals will become ever-more important as global uses of satellite and wireless devices increase.

We are also working to open up wireless and wirelined markets to competition, both domestically and internationally. NTIA helped secure the success of the World Trade Organization (WTO) Agreement on basic telecommunications services in March 1997. Nearly 70 countries, representing approximately 95% of the world's telecommunications revenues, agreed to liberalize their telecommunications markets under that Agreement. NTIA is now working to ensure, among other things, that the signatories comply with their countries' regulatory principles in implementing the WTO Agreement.

NTIA's expertise in these areas will help resolve some of the critical questions in our global economy. The demands on our expertise and personnel are growing rapidly, however, as the telecommunications and information sectors take on increasing importance. Virtually every day, we address new technologies and new issues. The importance of these issues is reflected in the increasing number of requests we have also received from the White House, the Department of Commerce, other Federal agencies, and Congress. At the same time, our staffing levels have declined in recent years. In 1994, NTIA had 361 employees; today, we have 267. NTIA's budget request for FY 2000 should provide necessary resources to help us respond to the increasing number of demands and challenges as we enter the new digital economy of the 21st century.

Overview of FY2000 Budget Estimates

Let me start by giving an overview of NTIA's proposed FY 2000 budget. NTIA's budget request for FY 2000 is $72,369,000, with a staffing level of 336 FTEs. This represents an increase of $23,604,000 over NTIA's FY 1999 funding level and an increase of 48 FTEs. NTIA is seeking $17,212,000 for Salaries & Expenses (S&E). This includes increases for enhancing Federal radio spectrum management; upgrading our telecommunications research facility; implementing World Trade Organization requirements; and implementing the Presidential Critical Infrastructure Protection (CIP) program. NTIA is also requesting $20,102,000 to fund the Telecommunications and Information Infrastructure Assistance Program (TIIAP), and $35,055,000 to fund the Public Telecommunications Facilities Program (PTFP). The PTFP request is part of an Administration initiative with the Corporation of Public Broadcasting to assist broadcasting stations during the transition to digital broadcasting.

This funding will help NTIA maintain and augment its existing programs, which support the development of the nation's information and telecommunications sectors. I would now like to describe highlights of these, and other of NTIA's programs, which are critical to the continued development of our telecommunications and information technology sectors.

HIGHLIGHTS OF NTIA'S PROGRAM OPERATIONS

Domestic Policy

NTIA's domestic policy activities support NTIA's responsibilities as principal adviser to the President on telecommunications and information policies. The goal of these activities is to enhance the public interest by generating, articulating, and advocating creative and influential policies and programs in the telecommunications and information sectors.

While NTIA believes that open markets, competition, and industry development serve the public interest, NTIA also works to ensure the public interest in other ways. Foremost among these issues are those related to access to basic and advanced telecommunications services, the ability for people to control indecent or violent information coming into their homes, the transition to digital television, and encouraging minority participation in telecommunications. NTIA has also played a significant role in promoting electronic commerce and developing Internet policy, discussed in a separate section below. Throughout its existence, NTIA has developed and advocated policies to support the public interest in many areas such as these, and will continue to do so.

NTIA frequently files comments with the Federal Communications Commission (FCC) to represent the Administration's position on a broad range of matters. This year, for example, our filings included comments on the broadcast ownership rules; "truth-in-billing" on local telephone bills; the definition of "over the air signals" for purposes of the Satellite Home Viewers Act; guidelines to promote the deployment of broadband services; and tariffs relating to digital subscriber loops (DSL).

As mentioned above, NTIA is also increasingly called upon for its telecommunications expertise. We assist the White House and other Federal agencies in imple-

menting the pro-competitive goals of the Telecommunications Act of 1996, addressing issues relating to new technologies, and promoting affordable access to the nation's growing information infrastructure. NTIA also will be an integral part of a congressionally mandated commission on Internet content as a result of the Children's Online Protection Act.

Promoting Competition—NTIA continues to work towards eliminating barriers to competition in the telecommunications industry while protecting consumers. Throughout NTIA's twenty-year history, this agency has been at the forefront of pro-competitive telecommunications issues. Among other things, we contributed our expertise to debates concerning first passage, then implementation, of the Telecommunications Act of 1996. This Act required the FCC to adopt regulations regarding such things as access charges, universal service to rural and other areas, interconnection, and broadband services. NTIA filed comments in each of these areas.

Going forward, NTIA will continue to articulate policies on a host of issues surrounding new, better and lower priced communications products and services. We are continuing to advocate policies that spur innovation, encourage competition, and create jobs. NTIA will suggest, for example, ways to encourage the availability of new services to rural and underserved communities and will identify impediments to the growth and vitality of industry sectors.

Addressing New Technologies—New technologies and new competitive providers are also spawning new questions in domestic policy. Foremost among these issues are those related to the growth of the Internet, the transition to digital television, and the widespread availability of wireless communications devices. NTIA has met these challenges in various ways. We often focus our limited resources on identifying and analyzing "over-the-horizon" issues well before they become widely known even among telecommunications professionals. One such issue is that of "Internet telephony," the use of the Internet or Internet Protocol, in place of traditional long distance telephony. NTIA sponsored a forum in 1997 to bring together technical and industry experts with policymakers. In comments to the FCC that same year, NTIA took the view that this technology should be allowed to grow and therefore should not come under full common carrier regulation.

The intersection of industry sectors is also raising additional sets of issues regarding technological convergence. The telephone network, for example, is increasingly used to transmit data, and the television provides viewers access to the World Wide Web. As a result, we are seeing varied and unique combinations of previously discrete technologies. Such convergence presents major challenges to the existing regulatory infrastructure, and NTIA is examining new regulatory issues and challenges.

Competition, Diversity, and the Public Interest in Mass Media—NTIA has been active in mass media issues as well. Several years ago, we promoted inclusion of provisions in the 1996 Telecommunications Act calling for a voluntary television ratings system and the requirement that all new television sets be equipped with a "V-Chip." NTIA believes that the V-chip, in particular, will help parents choose which television programming is suitable for their children. As the first television sets containing the V-Chip become available this year, we will lead efforts to monitor implementation of the V-Chip requirement.

NTIA has also worked to advance policies to protect and extend the public interest in many other contexts as well. We believe that, as with other telecommunications services, robust competition in the video services markets will serve the public interest by providing consumers with greater choices, lower prices, and better services. Thus, for example, we wrote to the FCC last year regarding the matter of delivery via satellite of television network signals to households unable to receive local broadcast signals. We urged the FCC to adopt a definition and measurement of "over the air grade B signal intensity" to promote consumer choice and competition. More recently, NTIA helped develop the Administration position on pending legislative proposals to modify the Satellite Home Viewer Act.

In developing mass media policies, competition often supports the additional goal of providing a diversity of voices to be heard by the American people. NTIA has been monitoring trends towards concentration in the ownership of radio and television stations. The Telecommunications Act of 1996 relaxed broadcast ownership rules and directed the FCC to review the public interest merit of remaining rules every two years. In February of this year, NTIA wrote to FCC Chairman Kennard supporting relaxation of some broadcast ownership rules while maintaining others.

NTIA's involvement with the mass media also extends to new broadcast services, such as the upcoming transition to advanced television. Most notably, NTIA served as Secretariat for the President's Advisory Committee on the Obligations of Digital Television Broadcasters, which presented its report in December 1998. In the role of secretariat, NTIA did not direct or influence the recommendation of the committee. NTIA was pleased to be a part of this consensus-building process, which

brought together experts from the broadcasting industry, the public interest community, and academia to look at the future of television. Now that the work of this committee is complete, NTIA plans to continue policy development in this field.

Minority Ownership—Another of NTIA's goals is to enhance minority participation in telecommunications. NTIA's Minority Telecommunications Development Program (MTDP) is undertaking specific efforts in this regard, including: (1) directing ComTrain, a training program to assist new minority commercial broadcast owners; (2) disseminating information and conducting seminars on ownership opportunities in telecommunications (3) developing and commenting on legislative and regulatory proposals that promote minority ownership in telecommunications; (4) working with industry, and other government agencies on initiatives to increase public/private sector assistance to minorities interested in ownership of telecommunications businesses and services; (5) promoting TELECAP, a study of capital development strategies for minority investment in telecommunications; and (6) tracking minority ownership in broadcasting. NTIA will also continue to analyze policies that affect minority participation in telecommunications.

Universal Access—Ensuring universal access to communications and information networks also remains a high priority for NTIA. We have been leading efforts to redefine universal service to telecommunications services to ensure that rural Americans have access to the same new services being offered in urban and suburban America. Over the past 40 years, rural Americans have gone from about 60 percent having basic phone service to 94 percent today. This is due in large part to our commitment as a nation to universal service policies.

NTIA has undertaken numerous activities to promote universal service. In the 1995 and 1998 *Falling Through the Net* reports, NTIA documented the relatively low penetration of telephone connections and computer and modem ownership in rural and inner city communities. In a 1996 filing with the FCC, we recommended that the Commission set a national subscribership goal for the year 2000 to ensure that the telephone penetration level for all segments of society will be at least equal to the national average existing as of November 1996. As the Telecommunications Act of 1996 continues to be implemented, NTIA will continue to be a strong advocate for rural and underserved Americans, undertaking research, filing comments with the FCC, and participating in a variety of fora to ensure that these communities have access to these services, and the opportunities they provide, at reasonable rates.

NTIA has vigorously argued for the connection of schools, libraries, and other "community access centers" to the National Information Infrastructure. This step is integral to making access to advanced telecommunications and information services more readily available. Technology will be central to the mission of our nation's schools in our country. Numerous studies demonstrate the advantages afforded to students who have access to this technology. As the President has clearly stated, in order to succeed in the 21st century, our children must attain technological knowledge and tools. NTIA continues working to ensure that these tools are broadly available to the public.

Electronic Commerce

In addition to the domestic policy issues listed above, NTIA is playing a pivotal role in the Administration's cross-cutting efforts to develop electronic commerce and Internet policy. NTIA has been at the forefront of these issues, both domestically and internationally. We were a key participant in the development of the Administration's electronic commerce policy, reflected in *A Framework For Global Electronic Commerce,* issued in July 1997. Since then, NTIA has been a key participant in the White House's Electronic Commerce Working Group on such issues of broadband deployment, online content, domain name management, and consumer protection. Finally, NTIA has also played a leading role internationally by representing the United States government at bilateral discussions and at international fora. We have advocated the tremendous benefit of the Internet and electronic commerce to other nations' economies, as well as the merits of a non-regulatory, market-driven approach to the development of electronic commerce.

Domain Name Management—Since July 1997, NTIA has also been the lead agency responsible for implementing the President's directive to privatize the management of Internet domain name system (DNS) functions and increase competition in the registration of Internet domain names. The *Statement of Policy on the Management of Internet Names and Addresses,* which resulted from extensive public consultations, invited the private sector to create a new, not-for-profit corporation to undertake management of DNS functions and was universally well received. The private sector responded by creating the Internet Corporation for Assigned Names and Numbers (ICANN) to assume this management responsibility.

Currently, NTIA is working with ICANN under a Memorandum of Understanding to develop the procedures and steps necessary to complete a smooth and stable transition from the government to the private sector by September 2000. NTIA is also working with ICANN and Network Solutions to introduce competition in domain name registration services. On April 21, 1999, ICANN announced the names of 34 companies that have been accredited to begin registering names in the .com, .net and .org domains within the next 60 days. We believe that this competition will result in lower prices, greater choice, and better registration services for all users of the World Wide Web and we look forward to our continued work on these issues.

We have had numerous discussions with the staff of House Commerce Committee Chairman Bliley on the progress being made on this issue, and will continue to keep them informed of developments in this area.

Privacy—NTIA has also been at the forefront in addressing privacy on the Internet. We played a leading role in encouraging private industry and privacy advocacy groups to develop and adopt effective codes of conduct and technological tools to protect privacy on the Internet. Following extensive consultation with the private sector in January 1998, NTIA and the Department of Commerce issued *The Elements of Effective Self Regulation for Protection of Privacy,* which expresses our view that effective self regulation involves substantive rules, the means to ensure that consumers know the rules, that companies comply with them, and that consumers have appropriate recourse when injuries result from noncompliance.

In June 1998, the Department of Commerce held a public meeting on privacy, coordinated by NTIA. Although industry was somewhat slow to take up the self-regulation challenge, there are signs that business leaders are beginning to understand the need to take decisive action on privacy. For example, the Online Privacy Alliance (OPA), a consortium of information technology companies and industry associations, representing over 80 global corporations and associations, requires its members to adopt and post privacy policies consistent with OPA guidelines and participate in a self-regulatory enforcement mechanism provided through third parties such as BBBOnLine and TRUSTe. We will continue to closely monitor their progress.

NTIA has been involved in examining other issues of domestic privacy. For example, NTIA has met with leaders in the area of online profiling by Internet advertisers and is planning a meeting in July 1999, in collaboration with the Federal Trade Commission (FTC), to examine the issue in a public forum.

Controlling Indecent and Violent Content—NTIA will continue to examine policies that empower parents and other individuals to control the nature of information that comes into their homes, particularly that which is indecent or violent. NTIA supports the free flow of information over the Internet or through television and radio. It therefore has directed its policy positions towards developing tools to allow individuals to determine the types of material they receive.

NTIA has helped promote online content initiatives, such as "green spaces" to help parents and others find Web sites suitable for their children. We were designated as the Secretariat for the Congressionally-appointed Child Online Protection Act (COPA) Commission. We look forward to working with the Commission in producing a report on child online safety issues.

All of these efforts take on new importance, following the senseless killings at Columbine High School in Littleton, Colorado. NTIA will continue to work on national policies to help citizens control the type of information their children receive, while not impinging on fundamental free speech rights.

Consumer Protection—Another critical issue is online consumer protection. We know that consumers will be reluctant to shop on the Internet unless they feel confident that they will get what they pay for online and that redress will be available if they do not. Therefore, NTIA has facilitated private sector outreach in developing US policy in this area.

NTIA is working both domestically and within a number of international fora to foster the development of effective consumer protections for consumers participating in electronic commerce. In cooperation with the FTC and other government agencies, we have also helped to shape the policy debate in the Organization for Economic Cooperation and Development (OECD) regarding the development of guidelines for online consumer protection. The issue of online consumer protection intersects with many other e-commerce issues in which NTIA is active, such as jurisdiction, privacy, security, and authentication. NTIA provides an important broad perspective on these issues when formulating policy approaches for electronic commerce consumer protection.

International Advocacy—Finally, as the representative of the United States government, NTIA has been working to build international consensus for a non-regulatory, market driven approach to the development of electronic commerce. We know

that the Internet allows its users to exchange ideas and to experience the freedom of public speech of political expression, unlike any other medium before it. In many parts of the world, including Asia and Eastern Europe, the Internet is used by citizens to promote and spread the values of democratic government. Our efforts to promote greater use of the Internet and other new technologies should also facilitate the promotion of democratic values.

NTIA is actively engaged in discussions, both bilaterally and in international fora, to ensure that the "rules of the road" for the Information Superhighway are procompetitive, empower end users, and avoid establishing artificial impediments to the conduct of global electronic commerce over the Internet. NTIA led the U.S. negotiations on Internet and electronic commerce issues at the International Telecommunication Union's (ITU) Plenipotentiary Conference in November 1998. NTIA has also been a leader formulating best practices for Internet infrastructure deployment in developing countries.

International Policy

In addition to Internet and e-commerce issues, NTIA plays a key role on a range of other important international matters. As the representative of the U.S. government, we are working to attain an international consensus on open, competitive telecommunications policy; develop international satellite communications policy; and open foreign markets to U.S. industries. NTIA's efforts in these areas are spurring the development of the telecommunications and information sectors on both a national and global level.

International Telecommunications Policy—NTIA continues to play a lead role in promoting and building international consensus for open, competitive telecommunications networks, which creates opportunities for U.S. businesses abroad and offers market-based solutions to close the digital global divide.

We are a strong advocate for liberalization and privatization both in developed and developing country fora. For example, NTIA promotes implementation of the World Trade Organization's (WTO) Basic Agreement on Telecommunications, which calls for the liberalization of signing nations' telecommunications markets. We have also helped develop and implement training workshops for foreign telecommunications regulatory authorities, which focused on implementing the WTO Basic Telecommunications Agreement and covered a range of issues, including interconnection, spectrum management and universal service. NTIA has also served as a U.S. Vice-Chair at both the ITU World Telecommunications Development Conference in Malta and at the Plenipotentiary Conference held in Minneapolis last November. In our view, the ITU conference would not have been such a success without the Federal support provided by the Congress.

Additionally, we have sponsored several international telecommunications summits in cooperation with the Telecommunications Industry Association (TIA) and the International Trade Administration (ITA). These summits bring together government officials and telecommunications industry representatives to discuss major policy matters affecting specific regions. They provide a unique opportunity for foreign government officials and business representatives to meet privately with senior U.S. telecommunications industry representatives.

Currently, NTIA is planning the fifth Latin American Telecommunications Summit (LATS). Industry participants report that previous LATS have facilitated millions of dollars in sales and invaluable contacts with Latin American government and industry representatives. In March 1999, NTIA, TIA and ITA also collaborated on the second China-U.S. Telecommunications Summit (CATS) in Guangzhou, China, where 32 U.S. companies met with Chinese telecommunications officials, and Chinese telecommunications and IT companies. One company reported that the summit provided "immediate opportunities that may not have developed without the summit" and that they "were approached with proposals for joint ventures and set plans for further high level negotiations for deals that could run into hundreds of millions of dollars."

In addition to our activities in international fora, we have also pursued other steps to open markets to U.S. companies. Recently, NTIA helped assess the anticompetitive impact of Deutsche Telekom's interconnection policy. Working with U.S. companies seeking to enter the newly-liberalized German telecommunications market and with other agencies, NTIA found that certain changes made market entry by new service providers more difficult. NTIA has supported efforts to bring about appropriate corrective action.

NTIA is also supporting the U.S. wireless industry in proposing multiple standards for third generation (3G) wireless systems. NTIA is advocating the industry's position through the ITU and is further advocating that other governments similarly support the outcome of the ITU deliberations. NTIA and other agencies have

successfully obtained assurances from the European Union Commission that the European Union member states will respect the recommendations developed by the ITU for 3G systems and offer licenses on a technology-neutral and non-discriminatory basis.

Finally, NTIA has been an active and longstanding advocate for reform of international accounting rates (*i.e.*, those charges paid by U.S. carriers, such as AT&T, Sprint and MCI WorldCom to foreign carriers to terminate traffic at the foreign destination). NTIA seeks to lower accounting rates by bringing them in line with cost. We have helped shape U.S. advocacy and outreach efforts at the ITU, where member countries are seeking to reach an agreement on accounting rate reform. In 1999, NTIA has been concentrating its efforts on transitional arrangements for lesser and the least developed countries, which may need more time to adjust their rates to international competitive market pressures.

International Satellite Policy—NTIA also continues to play a pivotal role in the development and implementation of the U.S. policy objective of increasing competition in the international satellite communications sector.

On April 15, 1999 Inmarsat was privatized, completing a process begun over 5 years ago. We expect that INTELSAT itself will be fully privatized in the next several years. Throughout, NTIA has advocated policy changes to increase global competition in the international satellite communications sector. Iridium recently stated that it is able to offer service in 150 countries and expects this number to increase to 230 by year end. Moreover, ICO Global has, as NTIA consistently insisted, issued an initial public (stock) offering diluting control by former Inmarsat signatories and two U.S. firms (TRW and Hughes) have become strategic investors in ICO. The United States government, with NTIA's leadership, has pursued a procompetitive outcome in the face of opposition from other nations, and we are confident of achieving a similar result with INTELSAT's privatization.

As a result of the *International Anti-Bribery and Fair Competition Act of 1998,* NTIA will be conducting a study of any advantages accruing to the intergovernmental satellite organizations (INTELSAT and Inmarsat; the ISOs) as a result of their unique status. NTIA's report will examine any advantages affecting market access which result from government ownership, government contracts to the signatories, favorable tax or regulatory treatment for the signatories or from use of the ISOs' privileges and immunities. The study will be included in the Secretary's report to Congress.

Spectrum Management

Another of NTIA's chief roles is to manage the radio frequency spectrum that is used by Federal agencies in satisfying their legislatively assigned missions. In this role, NTIA processes the Federal agencies' requests for frequency assignments; provides Executive Branch leadership in coordinating both current and future spectrum requirements among the Federal agencies and with the FCC; develops and promotes positions at Treaty Conferences and other technical and management fora of the International Telecommunication Union regarding United States spectrum management interests; and supports specialized administration initiatives that are designed to achieve specific improvements in areas such as air traffic safety, federal spectrum management procedures, protection of critical infrastructures, and public safety.

The fundamental goal of spectrum management at NTIA, as it is worldwide, is to avert potential interference between users and to ensure that spectrum is available for future needs. NTIA's spectrum coordination is therefore critical to the success of air traffic control, national defense, national resource management, and other vital government functions.

Nevertheless, further coordination efforts are essential, particularly for public safety purposes. The horrific incident in Littleton, Colorado last month demonstrates the need for further coordination among communications systems. We understand that a number of the local, state, and federal agencies lacked interoperable communications systems, making the coordination of a response more difficult. NTIA will be looking more closely in the coming year at new ways to manage spectrum to help coordinate public safety efforts.

Satisfying Spectrum Needs—NTIA continues to coordinate the spectrum needs of the Federal Government by processing frequency assignment requests by some 53 Federal agencies. NTIA processes 300 to 400 such requests daily through an automated screening process to correct errors in the data and ensure conformity of rules and regulations and through a coordination process with Federal spectrum-using agencies via the Interdepartment Radio Advisory Committee (IRAC) to ensure interference free operation. In addition, NTIA also certifies spectrum availability of approximately 60 to 70 new major radiocommunications annually.

NTIA also provides leadership for and manages the activities of the IRAC, a body of representatives from twenty major Federal agencies. The IRAC has provided valuable advice to the Executive Branch on numerous spectrum policies and issues for the past 75 years. NTIA has maintained a constant relationship with the FCC both through the IRAC and directly to ensure compatible operations. This is especially important today since the vast majority of the spectrum is no longer divided into exclusive private-sector and Federal-sector bands, but is shared by all users in the United States.

Spectrum Efficiency—The Federal Government constantly seeks to modernize its radiocommunications, increase the amount of information transmitted per unit bandwidth, and expand the use of more efficient digital technology and the use of private sector radiocommunications. In order to improve Federal spectrum use, NTIA uses the following management tools. First, NTIA requires that every Federal Government user requesting a frequency assignment determine whether its need can be met by a private or commercially available service provider. This policy has helped encourage consideration of commercial services by many Federal Government agencies, including the Department of Defense.

Second, we promote the use of new spectrum efficient technologies. The Federal Government is a leader in developing new spectrum-efficient techniques such as narrowbanding, digital modulation, and spectrum sharing as well as in the use of the highest quality spectrum-efficient equipment. These techniques will lead to nearly double the number of frequencies available for land mobile communications. NTIA has required that all Federal users move to more efficient 12.5 KHz equipment for mobile communications by 2005 or 2008, depending on the frequency bands in which they operate.

Third, NTIA collects fees from Federal agencies for its spectrum management services, pursuant to Congressional mandate. Congress initially directed NTIA to begin a process to collect fees from federal agencies in the FY 1996 Appropriations bill for NTIA. At the same time, Congress reduced the amount of direct appropriations to NTIA by the amount of the fees. Because of serious difficulties in collecting fees in FY 1996, Congress subsequently passed a law directing Federal agencies to cease using the spectrum if such fees were not paid. Based on this legislation, NTIA and the Federal agencies entered into agreements in which the agencies agreed to pay their prorated share. These fees cover 80% of the Spectrum Management's funding requirement. Although we continue to experience some delay in payments because of the different methods of payment within the Federal agencies, NTIA has received the requested funds from the agencies. We are pleased with the progress that has been made with this program.

Increasing Private Sector Access to Spectrum—NTIA continues to work with the FCC, the private sector, and Federal agencies to promote sharing of spectrum, where feasible, with private sector users. Since 1978, NTIA has coordinated the reallocation of more than 5,000 MHz of spectrum to exclusive private use or greater shared use with private sector entities. This is a significant amount of spectrum—today's entire wireless telephone system, including cellular and personal communications systems, is allocated only 170 MHz.

Spectrum reallocation and reimbursement—Over the past several years, NTIA has begun to reallocate 235 MHz of spectrum from Federal Government use to the private sector. The process for identifying spectrum for reallocation was based on a two year study which took into account two major factors: (1) the impact on the Federal agencies, in terms of mission, costs, and potential reduction of services to the public, and (2) the benefits expected to be realized by the public. Based on the extensive planning and coordination with the FCC, government agencies, and the public to produce this report, NTIA identified an additional 35 MHz of Federal spectrum to transfer to private use. NTIA has already reallocated 195 MHz of the previously identified spectrum. The remaining spectrum is scheduled for auction by the FCC by 2002, in accordance with the Balanced Budget Act of 1997.

NTIA has also recently transferred spectrum to the private sector to support satellite systems. During the International Telecommunication Union World Radiocommunication Conference (ITU/WRC) in October 1995, NTIA coordinated the release of 3 MHz of Federal Government spectrum for exclusive use in mobile satellite systems (low earth orbiting satellites, or LEOs). NTIA has also arranged for shared use of 360 MHz of Federal Government spectrum for mobile satellite links for big LEOs.

Most recently, NTIA identified 20 MHz of spectrum for reallocation by the FCC to private sector uses and assignment by competitive bidding in accordance with the Balanced Budget Act of 1997. Proceeds of these auctions were originally to be contributed towards balancing the Federal budget by fiscal year 2002. Federal agencies' relocation costs associated with this reallocation are in excess of $ 1 billion. Under

the recently enacted defense authorization statute, these affected Federal agencies will be reimbursed for their relocation costs by the winners of the spectrum auctions of the 20 MHz and the previously identified 1710-1755 MHz band. NTIA will work closely with the Office of Management and Budget, the FCC, and affected Federal agencies to see that this process is successful. We appreciate the Commerce Committee's support in securing this legislative authority.

Planning for Future Spectrum Needs—**Reinventing the spectrum authorization process—**NTIA began a program in 1993 to develop an automated Federal spectrum management system to provide a standardized, automated method for Federal agencies to submit applications for spectrum support, select spectrum that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. This system will allow NTIA to make the spectrum management process more efficient and responsive, more accessible, and less bureaucratic. NTIA introduced the Joint Spectrum Management System for windows (JSMSw) in March 1997. Based on feedback the Federal agency users, JSMSw has been revised to make it efficient and effective. Improvements will continue on JSMSw to make it even more effective and to make actual use of spectrum more efficient. JSMSw provides spectrum management tools to spectrum managers in the field so that they can manage their own use of the spectrum, use the spectrum more efficiently, and more rapidly obtain spectrum to meet their needs. Seventeen seminars have been conducted by NTIA for Federal agency spectrum managers in the use and application of JSMS.

Public Safety Needs—One of the most pressing Federal spectrum needs is that of public safety. Under Congressional leadership, NTIA and the FCC established the Public Safety Wireless Advisory Committee (PSWAC) in 1995. The Committee was composed of appointees from Federal, State, and local governments and private sector public safety organizations. The goals were to evaluate the wireless communications needs of public safety agencies through the year 2010 and recommend possible solutions to the lack of available spectrum and interoperability problems. In September 1996, PSWAC submitted a report outlining the public safety community's need for additional spectrum, improved interoperability, more flexible licensing policies, and increased sharing of spectrum resources. Many of the PSWAC recommendations have now been adopted.

The FCC is currently conducting a rulemaking to provide the state and local public safety community with 24 MHz of spectrum that will be made available when broadcast TV migrates to other portions of spectrum as part of the deployment of digital television. NTIA is working with the FCC to develop procedures for licensing of this spectrum and to provide a means to establish interoperability between state, local and the Federal government. To this end, NTIA will be participating in the FCC's recently established Public Safety National Coordination Committee. The advisory committee will develop an operational plan to achieve national interoperability, as well as technical standards to achieve full interoperability and network integration. The work of the committee is to be completed by September 2000.

As provided for in the FY 1999 budget, NTIA is increasing its public safety staff to identify the long-range spectrum requirements for the next 10 years and develop a strategy to provide sufficient spectrum for growth of current services, advanced technologies, and interoperability requirements. Through these efforts, we will continue to ensure that spectrum is available for Federal Government and the public safety community to meet the needs of law enforcement, national security, safe airways, disaster and environmental control, and the promotion of safe living conditions.

Global Positioning System (GPS) Expansion.—NTIA is also addressing issues that will protect the radio spectrum currently used by the global positioning system (GPS) and facilitate the expansion of GPS services. GPS is a worldwide utility that provides precise position, velocity, and time information anywhere in the world. GPS information is used by the public and private sectors in such areas as aviation, maritime and waterways, public transportation, railroads, telecommunications, surveying, defense, weather, environmental protection, and law enforcement.

In order for GPS to be used reliably and confidently as a worldwide utility, the radio spectrum within which it operates must be protected. NTIA is responsible for leading the efforts in preparation for the World Radio Conference 2000 to protect the radio spectrum used by GPS.

NTIA is also dedicated to making spectrum available for the expansion of GPS. The President's FY 2000 budget would provide for two new signals for civilian uses of GPS. One of the signals will be available for general applications. The other signal will be located in a portion of the spectrum allocated to aeronautical radionavigation services for aeronautical safety applications.

NTIA will be addressing the associated international spectrum issues at forthcoming technical fora and the World Radiocommunications Conference 2000. NTIA will also continue its efforts to work with the Department of Transportation, the Department of Defense, the Department of State, the FCC, and the private sector to ensure that spectrum is available in the future for this purpose.

Infrastructure Protection—Finally, NTIA has taken a leading role in protecting the national information infrastructure. As information and telecommunications systems become increasingly critical to our daily communications and our national economy, protection of this infrastructure is also becoming a priority for the nation. In May 1998, the President issued a Decision Directive (PDD-63) to create a public/private partnership to address the nation's need to protect our critical infrastructures from purposeful attacks. PDD-63 designated the Department of Commerce as the lead agency to conduct a vulnerability assessment to protect the nation's information and communication infrastructure. The Secretary of Commerce assigned NTIA the responsibility to carry out this program.

NTIA is planning to undertake numerous activities as lead agency. Among other things, we will be working with industry to raise awareness of the threat to, and vulnerabilities of, their infrastructure. NTIA will also *work with industry* to develop plans to mitigate the risks, deal with attacks, and reconstruct damaged infrastructure. Additionally, we will encourage the adoption of security standards and best practices, not only within the United States, but also among our major industrialized partners. Our goal is to harmonize our efforts with other countries and take best advantage of their developments in technology and policy because this infrastructure is inherently global.

Throughout this process, we will be working closely with industry, as most of the information and communications infrastructure is owned and operated by the private sector. We are working with three key trade associations—the Information Technology Association of America (ITAA); the United States Telephone Association (USTA) and the Telecommunications Industries Association (TIA). In addition, NTIA has established close working relations with other government agencies, which will contribute to the effort. These include the National Communications System (NCS), the President's National Security Telecommunications Advisory Committee (NSTAC), the Federal Communications Commission's Network Reliability and Interoperability Council (NRIC) and the FBI's National Infrastructure Protection Center (NIPC). These close working relationships should ensure the cooperation of industry and government in our efforts to protect the nation's infrastructure.

Telecommunications Research

NTIA is greatly assisted on spectrum management and other telecommunications issues by its laboratory in Boulder, Colorado. The laboratory, operated by NTIA's Institute for Telecommunication Sciences (ITS), performs state-of-the-art telecommunications research to support NTIA and Department of Commerce goals. It also conducts specific research under reimbursable agreements with other Federal agencies and under cooperative research agreements with private sector partners.

ITS is an active contributor to many agency endeavors, including those dealing with spectrum efficiency and sharing issues, digital television, broadband wireless technology and convergence issues, advanced video and voice performance testing and standards development, Internet technology issues, and critical information and communication infrastructure research and development. Most recently, ITS provided essential information with respect to signal contours for purposes of the Satellite Home Viewers Act and related proceedings.

The Value of Federal Research—ITS's research laboratory plays a critical role in telecommunications research because it is is unbiased and cuts across government and industry needs. In many instances, ITS's input is essential to resolving pressing technical questions that can't be resolved by industry. For example, ITS's research laboratory recently assisted the FCC in the development of the national digital television channel assignment plan to facilitate the introduction of Digital Television (DTV) across the United States. Without this work, digital television channel assignments could not have been made in a timely and effective way, potentially costing television broadcasters millions of dollars due to increased interference. Private sector experts probably could not have done this work in an unbiased fashion, since their livelihood depends on the continued affiliation with their broadcast customers.

In another recent example, ITS participated in international frequency band allocation proceedings for direct satellite audio broadcasts. ITS was tasked to determine the viability of the proposed bands in the United States. ITS's measurements, which showed that the satellite signals could not be received, prevented the investment of billions of dollars in potentially unusable satellites. The private sector probably could not have provided such measurements, because they would be considered bi-

ased and would not have had the same influence as Government measurements. Additionally, industry did not have the means to make these measurements in a short time frame.

Over the years, there have been numerous external and internal reviews of NTIA's laboratory. All these reviews concluded that there is a compelling need for a centralized Federal telecommunications laboratory that serves the public interest by undertaking uniquely governmental research functions in a cost-effective fashion. The ITS laboratory is essential because it is guided by the public interest, not profit motives. A centralized laboratory is also crucial to preventing the duplication of telecommunications research efforts among Federal agencies.

Review of Telecommunications and Information Technology (IT) Systems—ITS also provides expert advice to government agencies with regard to telecommunication and IT planning and implementation. The laboratory helps these agencies provide cost-effective and interoperable systems to accomplish their missions. For example, ITS provided the U.S. Forest Service a national strategic plan for upgrading telecommunications and IT systems across all National Forests; assisted the Department of Transportation in developing a national Intelligent Transportation System to aid traffic control and general public transportation safety; analyzed Federal Railway Administration telecommunication requirements for rail safety and positive train control systems; evaluated and designed Federal Aviation Administration augmentations to Global Positioning System capabilities for air traffic control and ship navigation; and conducted engineering studies and developed standards for the National Communications System to assure interoperability and continuity of operations during national emergencies.

ITS is also playing a central role in the Department of Justice's Interoperability Standards Task Force (a consolidated effort of several Justice information integration programs), which is aimed at establishing telecommunications interoperability and effective information sharing among agencies in the local, State, and Federal criminal justice and public safety communities. ITS has the responsibility for identifying and analyzing the user needs at all levels and for proposing a comprehensive set of interoperability standards that will allow a nationwide criminal justice and public safety enterprise network.

Spectrum Use—Finally, NTIA's laboratory provides significant information on spectrum use. ITS maintains the Nation's database of radio propagation characteristics for the entire radio spectrum to help improve radio communications in the U.S. and internationally. The database provides the foundation for models used by NTIA to prepare domestic and international radio standards and spectrum sharing agreements, by NTIA and the FCC in national spectrum management, and by the broad community of private sector and government users for planning, designing, and implementing radio telecommunication systems. This information also facilitates work on advances in telecommunications technology—such as personal communications services and high definition television--to benefit all citizens.

ITS also provides comprehensive measurements of spectrum use and occupancy. These measurements provide critical information for spectrum policy and regulation which otherwise would be based solely on information contained in licensing documents and other records. This measurement capability is also used to solve difficult radio interference problems. Suspected radio interference between Government agencies, or the Government and private sector, can become contentious. ITS, because of its neutrality and expertise, is able to establish the trust of the parties and develop the evidence regarding any suspected interference. ITS has been able to quickly resolve many interference problems that other Government agencies and private sector organizations were not able to resolve.

ITS is proposing in FY 2000 a Broadband Initiative to develop the fourth generation of its Radio Spectrum Measurement System. This work is required to keep pace with the changes in spectrum use brought about by the deployment of new technologies such as spread spectrum wireless communications. Without the initiative, ITS will not be able to maintain its capability to make comprehensive spectrum use and occupancy measurements and to quickly resolve suspected interference by Government systems to private sector operations.An FY 2000 initiative has been proposed for ITS to lead efforts in Critical Infrastructure Protection (CIP) research related to telecommunications and information technology. With its tremendous expertise and experience, ITS is a natural candidate to lead these efforts. ITS will develop a process for characterizing the assets of existing infrastructures, work with other Federal agencies and industry to identify threats and vulnerabilities to specific parts of the infrastructure, and define and evaluate mitigation strategies based on existing and emerging products and technologies.

Grant Programs

Another significant area of NTIA's activities is its two grant programs, which help expand access to new technologies. Having documented the "digital divide," NTIA is also seeking to bridge the divide between those with access to new technologies, and those without. The Telecommunications and Information Infrastructure Assistance Program (TIIAP) provides matching grants to non-profits and public entities that are using new technologies in innovative ways to reach those in rural, low-income, and traditionally underserved areas. NTIA's Public Telecommunications Facilities Program (PTFP) supports the maintenance and improvement of public broadcasting facilities throughout the United States and its territories. Both programs are ensuring that Americans have greater access to the benefits provided in our digital age.

Telecommunications and Information Infrastructure Assistance Program—Since 1994, TIIAP has helped underserved communities use information infrastructure to improve the quality of, and the public's access to, lifelong learning, health care, public safety, and other community based services. TIIAP provides critical seed money, without which many innovative and vital applications would not take root and grow in these communities. We have awarded 378 grants to schools, libraries, hospitals, State and local governments and other non-profit entities in all 50 states, the District of Columbia and the U.S. Virgin Islands.

This competitive program has been able to award only one out of every 14 applications. Over the first five years of the program, NTIA received almost 5400 applications. Approximately $118 million in federal grants have been matched by more than $180 million in non-federal funds. In 1998 alone, TIIAP leveraged $18.5 million in federal funds matched by $24 million in private, State and local funding and awarded 46 grants from over 750 applicants to projects in 35 states and the District of Columbia. For 1999, TIIAP has received 702 applications seeking over $278 million in grant funds. These applications represent more than sixteen times what NTIA can fund, making TIIAP one of the most competitive federal grant programs.

TIIAP has an excellent track record of supporting highly successful information infrastructure projects in underserved communities. The program leverages a modest federal investment into significant community investments and provides national models for public and nonprofit organizations to follow.

For example, through a TIIAP grant to the City of Winston-Salem, fire department vehicles responding to emergencies in Winston-Salem and surrounding communities have access to graphic information about the emergency sites as they respond. Detailed images of all city buildings have been created and made accessible in the fire department vehicles by using technologies such as document imaging, geographic information systems (GIS), mobile computers, and global positioning technology. By giving fire fighters better decision-making options during emergency responses, the system enables them to fight and contain fires more effectively, to save lives and property, and, in some cases, prevent fires from spreading to other locations. This project has received international acclaim—it was recently selected as a finalist in the prestigious Global Bangemann Challenge, which honors "the best information technology projects that cities can show."

A TIIAP grant has also provided Internet connectivity for chronically-ill children at the University of Mississippi Medical Center. This connectivity enables these patients to continue their education and maintain contact with peers, teachers, and parents. Through the TIIAP grant, both hospitalized and homebound patients can use laptop computers and desktop video conferencing to gain access to their teachers, their classroom assignments, and their friends and families. Its impact on their emotional well-being, as well as their continued classroom involvement, is invaluable.

The benefits of the TIIAP grant program were confirmed recently by an independent evaluation by Westat of projects funded in the program's first two years. Among other things, the evaluation found that 90 percent of the projects are still in operation, and that the majority of projects reported meeting or exceeding nearly all of their objectives. Most important, the projects are sustaining themselves beyond the federal grant period and are generating new funds. Each grant dollar has generated another four non-federal dollars to support information infrastructure. In addition to matching funds, the grants led to investments that expanded their services beyond the original scope and further investments to support spin-off activities.

The projects' role as national models further leverages the TIIAP investment. Extensive outreach by the projects in response to the tremendous interest is spreading the benefits of the TIIAP grants to other communities. The 206 organizations surveyed in the independent study reported responding to 79,000 unsolicited requests for information and hosted visitors representing over 5,000 organizations.

The evaluation also found that TIIAP projects help communities in need and serve a diverse public. Sixty-five percent of the projects involved rural areas, while 48 percent served the inner cities. Fifty-nine percent reached those living in extreme poverty and 42 percent involved users with disabilities.

TIIAP grants provide the catalyst for the vast majority of these programs. Seventy-five percent of grant recipients reported to Westat that their projects never would have happened without the TIIAP funds. Of the remaining 25 percent, 90 percent indicated that, without TIIAP support, the projects would have either reached significantly fewer people, or have been substantially delayed, or dramatically reduced their range of services.

For a modest federal investment, TIIAP is providing a tremendous body of knowledge on which policy makers, community leaders, and technologists in the private, public, and nonprofit sectors can rely as they work to ensure that advanced telecommunications and information technologies reach the farthest corners of our nation. The excellence of the TIIAP-funded projects is reflected in the nationwide and international acclaim they receive. For example, four TIIAP grant recipients were recently named on a short list of finalists in the Global Bangemann Challenge, which honors the best information technology projects that cities can show. TIIAP projects have also received awards from the NII/GII awards competition, the National Rural Health Association, the National Association of Development Organizations, the Medical Library Association, and the National Association of Counties, among many others.

Most importantly, TIIAP is strengthening our communities by revolutionizing how we learn, how we take care of our sick, how we control crime, and how we create opportunities for people most in need.

Public Telecommunications Facilities Program (PTFP)—NTIA's PTFP has helped public broadcasters maintain and expand their equipment and facilities for the last 35 years. The grants achieve three Congressionally mandated objectives: (1) extend delivery of public telecommunications services to as many American as possible by the most effective and efficient means; (2) increase public telecommunications services and facilities available to, operated by and owned by minorities and women; and (3) strengthen the capability of existing public broadcasting stations.

Facilities funded by PTFP have given millions of Americans access to the educational and cultural programming of public broadcasting. With the program's assistance, a public television signal now reaches about 95% of our nation's population and public radio reaches approximately 90% of the population. NTIA and its predecessor agencies have assisted noncommercial entities to acquire the necessary hardware to produce and broadcast public television and radio programs, radio reading services, and descriptive video services for the disabled. NTIA also supports the delivery of instructional and educational services by a broad array of community institutions.

Since PTFP's inception, over $500 million in federal funds has been invested in the public broadcasting infrastructure. Local communities have provided upward of another $500 million dollars to match the federal grants. In 1998, NTIA awarded $19.9 million for 115 projects in 41 states to facilitate the expansion of public broadcasting services to communities across the country and ensure the continuation of service. After receiving clearance from the FCC, NTIA recently awarded three addition projects from 1998. A number of the awards will expand access to public radio to 450,000 persons who presently do not receive any signal. Communities such as Santa Rosa, CA; Wilmington, DE; Kilauea Town, on the island of Kauai, HI; Leonardtown, MD; Manteo, Buxton, and Waves, NC; Manahawkin, NJ; Lund and Ely, NV; the Duck Valley Reservation of the Shoshone-Paiute Tribes in Owyhee, NV; Defiance, OH; and Vernal/Uintah, UT, will receive either their first public radio service or greatly expanded service.

The President's FY 2000 budget requests $450 million over 5 years to go towards the conversion of digital television. In April 1997, the FCC issued regulations requiring broadcasters to transition from analog to digital broadcasting. Public broadcasters must convert to digital broadcasting by May 1, 2003. This deadline allows the analog spectrum to be turned over to commercial users by the 2006 date established by Congress and mandated in the Federal Balanced Budget Act of 1997. The President's budget requests advance appropriations for a multi-year effort to allow advance planning and certainty in the public broadcasting system's transition to digital broadcasting. In FY 2000, the Administration is seeking $35 million from Congress to the PTFP. The $35 million request is part of the $450 million initiative, now in its second year. The initiative seeks funds in both the Corporation for Public Broadcasting and PTFP. Funding through PTFP will be targeted for digital transmission equipment, while funding for Corporation for Public Broadcasting will support necessary expenses related to digital program production and development.

Public broadcasting stations are undertaking an enormous new financial burden as they transition to the digital format. Over $700 million is needed for the nation's public television stations to meet the FCC's minimum digital broadcast pass through requirements. The conversion will place an enormous strain on the already precarious budgets of many of the public broadcasting stations. Federal assistance is critical during this transition period. For almost half the public television licensees, the cost of conversion to digital is projected to exceed their annual revenues. If stations are forced to convert without assistance, many stations will be forced to go off the air or reduce hours of operation, adversely affecting programming quality and diversity.

PTFP will take special measures to assure that the full potential of the new digital technology is used to provide the most economical means possible of providing public broadcasting services. Special consideration will be given to stations broadcasting in under served markets, especially those in rural, remote, or disadvantaged communities. In addition to digital conversion assistance, PTFP will continue its traditional support to expand the availability of public broadcasting services to those areas without such service. PTFP also will assist public radio and television stations to continue providing their existing analog service during the federally mandated transition period.

Since September, NTIA has awarded fifty-two awards to assist public television stations with the purchase of digital-ready or digital-compatible equipment. Three of these projects—KCTS-TV, Ch. 9, Seattle; KQED-TV, Ch. 9, San Francisco; and KCET-TV, Ch. 28, Los Angeles—will allow stations to complete their full digital conversion. Another grant will permit KERA-TV, Ch. 13, Dallas, TX, to share the cost of a digital TV antenna, thus allowing the station to remain on its current tower and greatly assist in its digital conversion.

As a result of an emergency grant to the Mississippi Authority for Education Television, the state network restored analog public television service to the Jackson area and allowed the Jackson station to broadcast experimental digital programming. NTIA funded a new tower and transmission equipment in response to the collapse of the commercial tower on which the public television station's antenna had been located.

These examples demonstrate NTIA's efforts to preserve public broadcasting, bring service to remote and rural communities, and encourage efficient technologies. NTIA will follow the same objectives as we assist public television with digital conversion and ensure that all public television transmitters are converted by 2003.

Agency Operations

NTIA is also committed to improving agency operations and management. Beginning in 1990, Congress passed several major pieces of legislation governing the way Federal departments and agencies operate, specifically:

—the Chief Financial Officers Act of 1990, as amended by the Government Management Reform Act of 1994;
—the Government Performance and Results Act of 1993; and
—the Clinger-Cohen Act of 1996.

NTIA has made significant progress in implementing these laws. The Chief Financial Officers Act requires Federal departments and agencies to prepare annual financial statements and have those statements audited in accordance with generally accepted auditing standards. The Department of Commerce is committed to improving financial information and financial management capabilities. NTIA was one of the first Commerce agencies to receive an unqualified opinion on its financial statements for 1993, and has continued to receive unqualified opinions on all subsequent statements. Since 1995, the audits conducted have been formal full scope audits. The unqualified opinions confirm that NTIA's financial statements fairly present the financial position of the agency.

Under the guidance provided by the Government Performance and Results Act (GPRA), NTIA has established a strategic planning process and developed an agency strategic plan. During the past year, NTIA's senior managers have focused on redefining NTIA's goals and objectives and succeeded in reducing the agency goals from seven to four. A continuing emphasis has been placed on measuring performance, both internally and at the Department level. NTIA's internal planning process is designed to complement and reinforce the Department of Commerce planning efforts. NTIA managers have embraced the planning process as a way to improve our management and maximize the return to the public from the agency resources available.

NTIA is also supporting the Department's efforts to properly implement the philosophy of the Clinger-Cohen Act. Clinger-Cohen (also called the Information Technology Management Reform Act) is designed to improve our management of the information technology investments necessary to enable us to fulfil our missions. The

information technology investments NTIA makes are directly linked to our business needs. The strategic and operational information technology plans directly support for the agency's goals and objectives. NTIA has processes in place designed to ensure that all major information technology investments are evaluated in terms of the overall business value to the organization. In addition, NTIA's laboratory (ITS) is performing a Telecommunications Assessment across all bureaus and agencies of the Department to provide the current status of telecommunications and information technology assets for Commerce management, and to allow informed decision-making on future evolutions in the infrastructure.

NTIA has declared two information technology systems to be mission critical for year 2000 efforts: the Spectrum Frequency Management Systems and the Grants Processing System. Both these systems are year 2000 compliant. NTIA is in the process of developing year 2000 contingency plans for its own essential operations and working with the Department of Commerce to ensure telecommunications and other services are available for essential personnel.

CONCLUSION

NTIA serves a critical role in developing and promoting policy in all areas relating to the telecommunications and information sectors. We have taken the lead, both on the domestic and international front, in setting forth positions in spectrum management, universal service, broadband networks, global competition, and electronic commerce—to name a few key areas. Given the increasing importance of these issues to our domestic and global economy, NTIA is playing an increasingly significant role in its position as representative of the U.S. government and Executive Branch advisor.

As NTIA Assistant Secretary for six years, I continue to be proud of the role we play and the accomplishments we have achieved. We hope to continue to address the myriad new issues in telecommunications and information technology with the same level of expertise and thoroughness that we have always displayed. This objective has become increasingly difficult, however, as the issues and demands on NTIA have increased, and the staff levels have decreased. I fear that NTIA's leadership in the dynamic and expanding telecommunications and information arena could be compromised without adequate resources. We therefore appreciate the support of this Committee as it considers our FY2000 Budget Estimates so that NTIA can continue to play a leadership role.

APPENDIX A

NTIA COMMENTS ON MAY 5, 1999 DISCUSSION DRAFT "NTIA REAUTHORIZATION ACT OF 1999"

The Administration offers the following comments on the Discussion Draft "NTIA Reauthorization Act of 1999" (dated May 5, 1999):

The funding level contained in the Discussion Draft falls short of the President's request for fiscal year 2000 and does not reflect the fiscal year 2000 budget priorities for NTIA. The President's fiscal year 2000 budget provides a funding level of an estimated $17.2 million for salaries and expenses. The President's budget request acknowledges the increasing demands on NTIA's resources and personnel as a result of the rapid growth of the telecommunications and information technology sectors of the economy. The President's request also includes additional funding to implement World Trade Organization requirements; enhance Federal radio spectrum management and efficiency; undertake a new broadband initiative for the telecommunications research facility at Boulder, Colorado; and implement Presidential Decision Directive-63 on Critical Infrastructure Protection. The Administration notes that Congress has directed NTIA to conduct 5 or more studies and staff a new Commission within the next year. Moreover, pending legislation would direct NTIA to conduct 3 or more additional studies.

The Discussion Draft does not include funds for the Telecommunications and Information Infrastructure Assistance Program (TIIAP). TIIAP provides matching grants on a competitive basis to community-based, non-profit and other public organizations, to demonstrate and promote the practical applications of new telecommunications and information technologies that improve the quality of, and the public's access to education, health care, public safety and other community-based services. In the five years of the program, NTIA has awarded 378 grants totaling $118 million, matched by an additional $180 million from the grantees and their private sector and State and local government partners. NTIA grant recipients have been recognized for their excellence on a national and international level by the Global Bangemann Challenge, the National Rural Health Association, the National

Association of Development Organizations, the Medical Library Association, the National Association of Counties, and the NII/GII Awards. The President's fiscal year 2000 budget requests $20 million for this program.

Although the Public Telecommunications Facilities Program (PTFP) has not traditionally been authorized through NTIA's authorization legislation, please note that the President's fiscal year 2000 budget also requests $35 million for this program. PTFP provides matching grants on a competitive basis to community based public telecommunications entities to plan and construct facilities that provide educational and cultural service to the public. Additional funding has been requested for fiscal year 2000 to assist public broadcasters with an orderly transition to digital broadcasting within the Congressionally mandated deadline for the transition.

The Discussion Draft would also require Federal agencies to reimburse NTIA for all of the costs associated with the agency's spectrum management function. Since fiscal year 1997, the Federal agencies have been reimbursing NTIA for a portion of the costs associated with these functions. The current reimbursement rate for fiscal year 1999 and the proposed rate in the President's fiscal year 2000 budget request is 80 percent. The Administration believes the 80 percent reimbursement/20 percent appropriated funds strikes the correct balance for the funding of its spectrum management functions for the following reasons. As the President's principal adviser on telecommunications, NTIA performs certain spectrum management functions on behalf of the well-being of the nation rather than directly related to spectrum management performed on behalf of the Federal agencies. Moreover, the 20 percent appropriated funds allows NTIA to retain its independence, objectivity and flexibility to perform spectrum management functions that might not be within the narrow interests of the Federal agencies, but are necessary in the national interest, *e.g.*, spectrum efficiency. These appropriated funds also provide bridge funding for spectrum management activities during the first quarter of the year as agency payments are received.

The Discussion Draft would also privatize NTIA's telecommunications research facility in Boulder, Colorado. Prior reviews of NTIA's Institute for Telecommunication Science (ITS) to determine its value to the nation have all reached the conclusion that there is a compelling need for a centralized, cost-effective, unbiased Federal telecommunications presence that serves the public interest and performs unique governmental engineering research. Further, the Administration believes that privatization of ITS would be detrimental to the national interest for the following reasons.

First, privatization of ITS through the sale of the laboratory would not result in any substantial revenues. The underlying laboratory assets, *e.g.*, telecommunications measurement and testing equipment, are very specialized prototype equipment with little or no market value. The true value of the laboratory resides in the knowledge and expertise of its highly trained and specialized senior engineering and scientific staff, many of whom could be expected to leave the laboratory for other Federal employment locally (*e.g.*, the Boulder laboratories of the National Institute of Standards and Technology or National Oceanic and Atmospheric Administration) or elsewhere to complete their Federal careers, rather than remain automatically with a privatized entity.

Second, privatizing the laboratory would eliminate an invaluable national telecommunications resource. ITS provides the Federal Government's only impartial telecommunications research and engineering capability to support the nation's telecommunications policy development efforts and Federal spectrum management mandate. For example, ITS has provided essential technical support in the following telecommunications policy areas: National Digital Television Channel Assignment Planning; spectrum occupancy and interference analyses to support national and international (*e.g.*, World Radio Conference) spectrum planning requirements; Satellite Home Viewers Act network coverage analysis; quick response measurement support to resolve potential safety-of-life interference; and audio and video telecommunication quality of service standards development.

Third, if ITS were no longer available to conduct this research, NTIA would need additional Federal funding to accomplish its essential technical research work. For a direct appropriated investment in ITS of approximately $3 million, the Federal government and the private sector receive approximately $10 million in research results through reimbursable telecommunications research work for other Federal agencies (*e.g.*, Departments of Defense, Justice, Transportation) and through cooperative research activities with the private sector (*e.g.*, US West, BellAtlantic, PacTel, BellSouth, GTE, Hewlett-Packard, Netrix, Integrator Corporation, Audio Logic, American Automobile Manufacturing Association).

Finally, the Administration believes that a legislative mandate to review the long-term efficiency of NTIA is unnecessary. It is our understanding that the Depart-

ment's Inspector General and the Comptroller General already have such authority. Moreover, during the past six years, NTIA has worked cooperatively with the Department's Inspector General on a number of studies examining the agency's management practices and efficiencies. For example, in 1997, the Office of the Inspector General conducted an audit of NTIA's Office of Spectrum Management (OSM) and reviewed in detail OSM's funding, fee collection and staffing practices. The Office of Inspector General determined that "no significant conditions" exist meriting the issuance of an audit report, but did note that OSM needed additional personnel and resources to meet its current and future needs and more timely reimbursement payments from Federal agencies. Since that report, OSM has worked to address these issues. Most recently, the Office of the Inspector General completed audits of NTIA's grant programs and found that both programs promote merit-based decisions. NTIA has already implemented the Office of the Inspector General's recommended improvements to the grant award processes. NTIA has also worked cooperatively with the General Accounting Office in its examination of federal funding for universal service, technology programs for schools and libraries, and law enforcement assistance, and on spectrum management issues involving the Department of Defense.

APPENDIX B

RECENT CONGRESSIONAL STUDIES FOR THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

Congress in recent years has authorized the National Telecommunications and Information Administration (NTIA) and Department of Commerce certain mandates.

- As a result of the *Child Online Protection Act* (COPA), NTIA will serve on a 19-member commission to study methods to reduce access by minors to material deemed harmful on the Internet. Further, NTIA, is required to staff the Congressionally-appointed Commission. The Commission has one year to submit a report to Congress.
- As a result of the *Digital Millenium Copyright Act,* NTIA is required to consult with the Register of Copyrights regarding infringing uses of copyright material; NTIA is required to consult with the Register of Copyrights and report to Congress on the Act's effect on encryption, technological measures and protection of copyright owners; and consult with the Register of Copyrights and report to Congress on the development of electronic commerce and associated technology.
- As a result of the *Next Generation Internet Research Act of 1998,* the Secretary of Commerce is directed to sponsor a National Academy of Sciences study that will look at the effects on trademark rights of adding new top-level domain names and make recommendations on how best to protect trademarks in the growing cyberspace economy. Congress authorized $800,000 for this study; however, no funds were appropriated. NTIA is the lead government agency carrying out the Presidential directive on Electronic Commerce supporting efforts to make the governance of the domain name system private and competitive. NTIA is working towards creating a contractually based self-regulatory regime that deals with potential conflicts between domain name usage and trademark laws on a global basis.
- As a result of the *International Anti-Bribery and Fair Competition Act of 1998,* the Secretary of Commerce is required to report to Congress on July 1, 1999, and each year for 5 years thereafter, with respect to implementation of the OECD Anti-Bribery Convention. Among other things, the Secretary is required to report on advantages, in terms of immunities, market access, or otherwise, in the countries or regions served by Intelsat and Inmarsat, the reason for such advantages, and an assessment of progress towards a procompetitive privatization of these organizations. NTIA has been tasked as the lead for the Department on the Secretary's report to Congress.

POTENTIAL STUDIES PROPOSED BY CONGRESS

- H.R. 1554, the Satellite Copyright, Competition, and Consumer Protection Act, passed by the House on April 27, 1999, directs NTIA and the Register of Copyrights to submit to Congress a joint study on technical and economic impacts of the must-carry obligations on delivery of local signals. The study would be due to Congress on July 1, 2000.
- H.R. 1714, the Electronic Signatures in Global and National Commerce Act, introduced by House Commerce Committee Chairman Bliley on May 6, would, among other things, require NTIA to report to Congress, within 180 days, and annually thereafter, identifying foreign barriers to commerce in electronic signatures. Second, the bill would direct NTIA to promote the acceptance and use

internationally of electronic signatures, and take such actions as necessary to eliminate or reduce impediments to commerce in electronic signatures. Third, the bill would direct NTIA within three years after enactment, to conduct an inquiry regarding State statutes, regulations, or other rules of law enacted or adopted after enactment and the extent to which statutes, comply with statute.

- Senate Commerce Committee Chairman McCain has indicated he will introduce soon legislation that will require NTIA, in collaboration with the FCC, to analyze the facts and the issues involved in the ongoing deployment of advanced broadband data networks, especially in rural and low-income areas, and report findings to Congress.

Mr. TAUZIN. I wonder how that logic, that analogy, would work with the IRS. If I don't pay the IRS 20 percent, do they really have to work for me?

Mr. IRVING. I am not going to try and find out.

Mr. TAUZIN. Let me now introduce our second witness, Mr. George Ross.

STATEMENT OF GEORGE E. ROSS

Mr. ROSS. Thank you, Mr. Chairman, members of the committee, I am pleased to appear before you. Our most recent work in NTIA concentrated on audits of its fiscal year 1998 financial statements and its fiscal year 1997 grant funding decisions. We have also conducted audits of NTIA grantees and reviewed several of NTIA's operations. Based on that work, we have found NTIA to be a well-managed agency whose leadership has responded positively to our recommendations for management improvements.

Since fiscal year 1994, NTIA has received an unqualified opinion on its financial statements, which means that those statements present fairly on all material aspects of NTIA's financial position and results of operations. That was a particularly noteworthy accomplishment for fiscal year 1998, considering that four new financial statements were mandated by OMB.

NTIA is also making steady progress to comply with the Government Performance and Results Act requirement that agencies report performance information. In March of this year we completed audits of NTIA's two discretionary financial assistance programs, the Public Telecommunications Facilities Program and TIIAP.

In fiscal year 1997, PTFP competitively awarded 97 grants totaling more than $14 million. TIIAP competitively awarded 55 grants totaling almost $21 million. We found that NTIA's criteria, procedures and practices for soliciting, reviewing, and selecting those awards generally complied with statutory Department of Commerce and NTIA requirements and appeared designed to result in merit-based awards.

However, PTFP program staff adjusted independent review scores for almost 90 percent of the applications without consulting the reviewers. Additionally, the Assistant Secretary, as the selection official, added and deleted applications from the recommended list without sufficiently documenting all of those decisions.

We recommended that NTIA implement its state of commitment not to adjust independent review scores and maintain written documentation of the reasons for making awards that deviate from the program director's recommendation. NTIA concurred. We also performed audits to ensure that NTIA grantees adequately account for the use of funds. Since October 1995, we have issued 10 OIG audit reports related to TIIAP recipients. These audits did not identify

any major systemic problems with the recipients of NTIA financial assistance.

A 1996 performance audit of TIIAP did disclose problems. NTIA officials agreed with our findings. Spending and staffing restrictions were lifted in the summer of 1996 and NTIA officials took a number of actions to implement our recommendations to properly monitor grants.

Our recent OIG inspection found relatively little cooperation between NTIA and the Department's International Trade Administration. In fact, ITA's Office of Telecommunications has its own staff working on many of the same issues as NTIA staff. Not only is there an overlap of duties, but roles and responsibilities for telecommunications policy initiatives and the promotion of interests abroad have not been clearly defined. We recommended that the Assistant Secretary for Communications and Information and the Under Secretary for International Trade firmly agree on their agencies"s respective roles and responsibilities and immediately expand cooperation between their offices and staffs. The Assistant Secretary generally concurred with our findings, but also noted that NTIA enjoys a close working relationship with certain components of ITA.

Our January 1994 Report on NTIA Interagency Agreements focused on the Institute for Telecommunications Sciences. We found that the growth in reimbursable work had shifted much of ITS's emphasis to projects only remotely related to Department of Commerce priorities. We recommended that NTIS focus ITS's work on the priorities of the Department and NTIA.

In October 1997 we completed a review of the Office of Spectrum Management's funding, fee collection, and staffing practices. Our work revealed no significant conditions meriting issuance of an audit report, but we did suggest NTIA co-inspect management fees in a timely fashion.

In November 1997 we completed an audit of the role of OSM and the FCC's decisions to relocate DEMS licenses and to award a license to a specific company. We conducted a detailed review to determine whether NTIA met its statutory responsibilities for Federal spectrum management. Our work revealed no significant conditions meriting the issuance of a report.

With respect to the bill we offer two comments. Section 3, requiring Federal agencies to reimburse NTIA for its spectrum management activities, is consistent with our review of OSM. These should be paid by Federal agencies throughout the fiscal year, since OSM conducts its spectrum management activities on a continuous basis.

Section 5 includes a requirement for the OIG to conduct an audit or evaluations of the performance of the NTIA in conducting each of its programs, functions, and operations, and to report the results and recommendations to Congress and NTIA. It may be helpful to point out that under the basic IG legislation, we already have the authority to audit the topics itemized in the proposed bill. Consequently, we view section 5 as an unnecessary provision. Of course, we will be pleased to discuss our audit and evaluation with members of the subcommittee and its staff.

[The prepared statement of George E. Ross follows:]

PREPARED STATEMENT OF GEORGE E. ROSS, ASSISTANT INSPECTOR GENERAL FOR AUDITING, U.S. DEPARTMENT OF COMMERCE

Mr. Chairman and Members of the Committee, I am pleased to appear before you today to discuss the Office of Inspector General's work related to the Department of Commerce's National Telecommunications and Information Administration (NTIA) and aspects of the Subcommittee's draft reauthorization bill for NTIA. I have attached a list of the OIG reports that will be covered in my testimony.

Our most recent work in NTIA concentrated on audits of the agency's fiscal year 1998 financial statements and its fiscal year 1997 funding decisions with respect to discretionary financial assistance. We have also conducted 10 financial audits of NTIA grantees; an audit of NTIA's Telecommunications and Information Infrastructure Assistance Program (TIIAP); an assessment of the coordination between NTIA's international activities on behalf of the telecommunications industry and the International Trade Administration (ITA), as part of a broad review of the Department's trade promotion program; and an evaluation of the performance of NTIA's Office of Spectrum Management (OSM).

Financial Statements Audits

An audit of NTIA's financial statements was first performed for fiscal year 1993. The audit, performed by an independent CPA firm under a contract with our office, resulted in an unqualified opinion on NTIA's Statement of Financial Condition, a significant achievement that resulted from the concerted efforts of the bureau's management to implement sound internal controls. An unqualified opinion means that the financial statements present fairly, in all material aspects, the entity's financial position and results of operations.

That achievement continued into subsequent year audits. The audits of NTIA's fiscal year 1994 and 1995 financial statements resulted in unqualified opinions on all financial statements. For fiscal year 1993, the auditors had identified four reportable conditions, but no material weaknesses in internal controls. Reportable conditions are significant deficiencies in the design or operation of an agency's internal control system that could adversely affect its ability to record, process, summarize, and report financial data consistent with the assertions made by management in the financial statements. Material weaknesses represent serious reportable conditions where the design or operation of an internal control component does not minimize the risk that errors, fraud, or noncompliance in material amounts may occur and not be readily detected.

Only one of the four reported conditions was cited again for fiscal year 1994. While the fiscal year 1995 audit found the same reportable condition, the fiscal year 1996 and fiscal year 1997 audits resulted in no reportable conditions.

The latest audit of NTIA's fiscal year 1998 financial statements also resulted in an unqualified opinion on all statements. This is a noteworthy accomplishment, considering that four new financial statements were mandated by OMB Bulletin 97-01, *Form and Content of Agency Financial Statements.* The independent audit firm did not identify any material weaknesses. In fact, the audits have never reported a material weakness for NTIA. However, the firm did cite one reportable condition in the bureau's internal controls over financial reporting of grants. Although the issue affected NTIA, corrective action is not within the purview of NTIA management because NTIA receives its grant accounting services from another Commerce Department bureau.

Government Performance and Results Act of 1993

NTIA, along with other operating units of the Commerce Department and other agencies throughout the federal government, faces many inherent challenges in determining how to best plan and measure its performance in accordance with the Government Performance and Results Act of 1993 (GPRA). Our office has reviewed NTIA's overviews to its financial statements. The overviews provide the linkage between the financial statements and the GPRA requirement that government entities collect and report information on their performance in meeting goals and objectives.

Our review of the draft fiscal year 1997 overview found that (1) it should be more clear and concise, (2) the linkage to the Department's Strategic Plan could be improved, (3) improved financial and program performance data were needed, and (4) the overview needed to discuss positive and negative results. We presented our findings to NTIA management. NTIA was responsive to our comments, making changes and indicating that they would make additional improvements in future years. In our transmittal memorandum to the final audit report, we stated that NTIA should strengthen reported performance measurement data and improve the presentation of information to facilitate trend analysis and assessment of whether target levels of performance have been achieved.

Our review of the fiscal year 1998 overview found that the bureau had incorporated many of our suggestions to strengthen the overview. We informally provided NTIA our observations on the draft fiscal year 1998 overview, including suggestions to (1) discuss the status of Y2K-compliance efforts, (2) strengthen the linkage between the financial statements and the overview, and (3) include more forecasts of potential problem areas. Once again, management was responsive to our suggestions. In our transmittal memorandum to the final audit report, we encouraged the bureau to strengthen next year's discussion of actual results and to continue efforts to improve performance measurement and reporting.

Year 2000 (Y2K) Compliance

NTIA has reported significant progress in ensuring that its computer systems and proprietary software will be operational after the turn of the century. NTIA has two mission-critical systems. The first is used by the Office of Spectrum Management in managing the government spectrum, and the second is used by the Office of Telecommunications and Information Applications (OTIA) in managing its grants process.

OSM has tested for and corrected the Y2K problems in its systems, and is already processing data with dates into the next century. A contractor has re-written OTIA's grants management software. According to NTIA, both systems have been subsequently tested and certified as Y2K-compliant.

Discretionary Financial Assistance Program Performance Audits and Grantee Audits

In March of this year, we completed audits of NTIA's two discretionary financial assistance programs: (1) the Public Telecommunications Facilities Program (PTFP), and (2) the Telecommunications and Information Infrastructure Assistance Program (TIIAP). Discretionary financial assistance programs are those programs for which federal agencies have the authority to independently determine the recipients and funding levels of awards. These programs involve a significant portion of NTIA's budget and operations, about $35 million in fiscal year 1997 awards and $38 million in fiscal year 1998 grants. These audits were conducted as part of a Department-wide review of Commerce's discretionary financial assistance programs initiated at the request of the Chairman of the Senate Commerce, Science, and Transportation Committee.

Through PTFP, NTIA provides financial assistance for planning, acquiring, installing, and modernizing public telecommunications facilities. In fiscal year 1997, the program received 221 applications for more than $50.5 million. Of these, 215 were accepted for review, and 97 grants totaling more than $14.1 million were awarded. All 97 awards were made competitively in response to a formal solicitation notice published in the *Federal Register,* posted on NTIA's Internet web site, and mailed to over 3,000 potential applicants on NTIA's mailing list.

Through TIIAP, NTIA provides financial assistance to nonprofit organizations, colleges and universities, and state, local and Indian tribal governments, to promote the widespread use of telecommunications and information technologies in the public and nonprofit sectors. In fiscal year 1997, the program received more than 920 applications for over $350 million; 876 were accepted for review; and 55 grants totaling almost $20.9 million were awarded. All 55 awards were made competitively in response to a formal solicitation notice published in the *Federal Register,* posted on NTIA's Internet web site, and mailed to over 18,000 potential applicants.

We examined NTIA's criteria, procedures, and practices for soliciting, reviewing, and selecting awards under both programs and found that they generally complied with statutory, Departmental, and agency requirements and appeared designed to promote merit-based funding decisions. We found that NTIA (1) developed and published merit-based technical and public policy criteria that were consistent with the programs' objectives and (2) complied with the Departmental and agency requirement to place a notice in the *Federal Register,* at least annually, announcing the availability of funds, soliciting award applications, and specifying the criteria and process to be used in reviewing and selecting applications.

We also found that NTIA followed established requirements for the competitive review of applications for TIIAP, but not totally for PTFP. Specifically, NTIA program staff participated in review panels for PTFP awards and routinely adjusted the independent reviewers' scores or composite evaluation scores without consulting with the reviewers. The staff adjusted either the score given by the independent reviewer(s) or the review panel's composite score, without consulting with the panel, for 191 of the 215 applications, or almost 90 percent of the applications reviewed by the panels. The program staff adjusted 153 applications to a higher score and 38 applications to a lower score. The program staff stated that the adjustments were made to correct applications misjudged or unfairly scored by the external reviewers.

Unilateral adjustment of evaluation scores has the potential to undermine the independence and objectivity of the review process. NTIA officials determined, prior to the audit, that they would not repeat the practice in fiscal year 1998.

Moreover, although Departmental and NTIA requirements for selecting applications were followed for both programs, documentation was lacking to fully explain the reasons for deviations from the program directors' lists of applications recommended for funding. For the year reviewed, we found that the Assistant Secretary for Communications and Information, as the selecting official, added three applications to the PTFP list, and added nine applications to and deleted seven applications from the TIIAP recommended funding list. A memorandum concerning the additional PTFP applications noted that the selecting official's decision was made to achieve greater geographical distribution, but did not provide specific reasons why certain applicants were selected over others. The Assistant Secretary provided justifications for the nine added TIIAP applications, but there were no written justifications for any of the seven deleted applications.

We recommended that NTIA ensure that the bases for making awards that deviate from a program director's recommendations are adequately documented. Additionally, we recommended that PTFP staff ensure that independent reviewers' scores are not adjusted by program staff during the review process. NTIA agreed with our findings and recommendations and is modifying its financial assistance award process to implement our recommendations.

We have also performed financial audits of grants awarded under these financial assistance programs to ensure that grantees adequately account for the use of award funds. Since October 1995, we have issued 10 OIG audit reports related to recipients of NTIA financial assistance. In that period, we also processed 236 Single Audit Act reports that covered $56.7 million of NTIA funding. These audits did not identify any major or systemic problems with recipients of NTIA financial assistance.

Performance Audit: "Information Superhighway" Program

NTIA's Office of Telecommunications and Information Applications (OTIA) is responsible for managing the TIIAP program, also known as the "Information Superhighway" program. We reviewed several program grants in 1996. Our reviews of those grants disclosed programmatic and financial problems, which were attributable in large part to inadequate program management staffing. For example, OTIA program officers did not normally visit grantees and only rarely contacted them by telephone, conducted only perfunctory reviews of grantee status reports and took no action when significant problems were indicated, and did not ensure that grantees were aware of federal grant requirements, particularly those pertaining to matching funds. Moreover, OTIA did not require independent evaluations of grant results, did not have a mechanism for grantees to exchange useful information with each other, and required program officers to perform routine administrative work to the detriment of their monitoring responsibilities.

OTIA officials agreed with our findings, but said that because of spending and staffing restrictions, they lacked the resources to properly monitor grants. These restrictions were lifted in the summer of 1996, and NTIA officials took a number of significant actions to implement our recommendations. For example, OTIA established an on-site monitoring program and conducted visits of 25 grantees from August through October of 1996; and instructed its program officers to make detailed analyses of grantee status reports, contact grantees if the reports indicate any problem areas or concerns, and forward the analyses to the Department for appropriate action.

Inspection Report: Coordination on International Telecommunications Issues

In a recent inspection report, we found that despite NTIA's participation in international telecommunications policy forums, there is relatively little cooperation between NTIA and the International Trade Administration. In fact, ITA's Office of Telecommunications within the Office of Trade Development has its own staff working on many of the same issues as NTIA's staff. Not only is there an overlap of duties, but the roles and responsibilities of each agency for telecommunications policy initiatives and the advancement and promotion of U.S. telecommunication interests abroad have not been clearly defined.

We recommended that the Assistant Secretary for Communications and Information and the Under Secretary for International Trade (1) formally agree on their agencies' respective roles and responsibilities in telecommunications export promotion and trade policy development, and (2) seek to immediately expand cooperation between NTIA and ITA offices and staffs. In response to our draft report, the Assistant Secretary of NTIA generally concurred with our findings on its relation-

ship with ITA, but noted a positive working relationship with certain components of the ITA.

Inspection Report: Interagency Agreements With Institute for Telecommunication Sciences

In January 1994, we issued a final report on our review of NTIA's interagency agreements that were performed for, and reimbursed by, other agencies, focusing on those agreements conducted by the Institute for Telecommunication Sciences (ITS). We examined the relationship between the work ITS performs through such agreements and NTIA's core mission, the benefits NTIA receives from those agreements, the amount of resources involved, and the adequacy of oversight by NTIA senior management. We found the following:

1. The growth in the volume of reimbursable projects had shifted much of the focus of the lab's work to projects that were remotely, if at all, related to Commerce Department priorities. Because of the volume of the reimbursable work, the size and staffing of the lab was larger than needed to accomplish the primary mission of NTIA and the Department.
2. The increase in lab operating costs, due almost exclusively to the growth of reimbursable projects, resulted in an unending cycle of employment growth and increased funding requirements. Senior managers were dissatisfied with the amount of time spent soliciting new projects.
3. ITS routinely entered into reimbursable agreements with the Defense Department in the last few days of the fiscal year, resulting in carryovers of funds to the next fiscal year. This practice raised serious questions about the propriety and legality of NTIA's obligating and expending "one-year" funds in the next fiscal year.

We recommended that NTIA (1) focus ITS's work on the priorities of the Department and NTIA; (2) seek alternative procedures for improving the lab's efficiency at handling reimbursable projects; (3) ensure that reimbursable "one-year" funds are properly obligated in the year received; and (4) return all reimbursable funds that were not obligated by the end of the prior fiscal year to the sponsoring agency. NTIA agreed to ensure that future reimbursable funding would be obligated in the same fiscal year, but otherwise disagreed with most of our specific observations and recommendations.

Other Correspondence: Performance Reviews of Office of Spectrum Management

In October 1997, we completed a review of the performance of NTIA's Office of Spectrum Management. The review included a detailed examination of OSM's funding, fee collection, and staffing practices. Although our field work revealed no significant conditions meriting the issuance of an audit report, we found several issues warranting management's attention, which we discussed in a memorandum to the Assistant Secretary for Communications and Information.

Specifically, resource assessments essential for effective long-range federal spectrum planning had not been performed; hardware and software had not been maintained to meet current and future needs; and inadequate support had been provided for national and international policy development and execution. OSM also lacked the personnel to fulfill its responsibility of ensuring that other federal agencies were complying with the conditions of their spectrum authorizations and using the limited spectrum efficiently, or that radio interference problems were quickly detected and corrected. We noted that these deficiencies might be exacerbated because a large percentage of the OSM work force would become eligible for retirement within three years. Furthermore, Interdepartment Radio Advisory Committee member agencies had not promptly paid their fiscal year 1997 spectrum management fees to NTIA.

We suggested that NTIA (1) evaluate the work that OSM had been unable to perform, determine priorities within the context of the agency's strategic plan, and begin planning to replace OSM staff who might retire within the next three years; and (2) take appropriate action to collect fiscal year 1998 spectrum management fees in a timely fashion.

Also, in November 1997, we completed an audit of the role of OSM in the Federal Communications Commission's (FCC) decisions to relocate Digital Electronic Messaging Service (DEMS) licenses and award a license to a specific company. We conducted a detailed review of OSM's actions to determine whether NTIA met its statutory responsibilities for federal spectrum management with respect to these decisions. Again, our audit work revealed no significant conditions meriting the issuance of an audit report. We found that OSM officials acted properly and protected government interests by offering spectrum for the FCC to use in the relocation of spectrum allocated for DEMS licensees. OSM officials also followed established procedures for

consulting with the Interdepartment Radio Advisory Committee on the use of federal spectrum.

We noted, however, that an FCC licensing bureau had issued DEMS licenses without the knowledge of FCC headquarters or OSM officials, even though the technology interfered with existing licenses for federal government satellite operations and with the planned use by private-sector satellite communications systems for which the U.S. government had negotiated an international agreement. In a memorandum to the Assistant Secretary for Communications and Information, we suggested that NTIA work with the FCC to establish a real-time licensing information system between FCC licensing bureaus and OSM that would reduce the likelihood of issuing licenses that interfere with federal spectrum use.

OIG Comments on Discussion Draft of Reauthorization Bill

We have reviewed the discussion draft of the proposed reauthorization bill and have these comments:

1. Section 3 of the draft, "Payment for Spectrum Management Functions," requiring federal agencies to reimburse NTIA for its federal spectrum management activities, is consistent with our findings during the aforementioned review of OSM. During the year under review, fiscal year 1997, NTIA and OSM experienced severe difficulties in collecting fees required under the appropriations act for that year. During fiscal year 1998, these fees were paid in a more timely manner by the other federal agencies. These fees should be paid by federal agencies throughout the fiscal year, and not just near the end, since OSM conducts its spectrum management activities on a continuous basis.
2. Section 5 of the draft, "Long-Term Efficiency," includes a requirement for the OIG to "conduct an audit or evaluations of the performance of the NTIA in conducting each of its functions, programs, and operations" and report the results and recommendations to the Congress and NTIA. It may be helpful to point out that under the basic Inspector General legislation, we already have the authority to audit and review the topics itemized in the proposed bill. Consequently, we view section 5 as an unnecessary provision. For example, we are currently considering performance audits of the PTFP and TIIAP programs to evaluate both program management and program performance. Of course, we would be pleased to discuss audit and evaluation areas with Members of the Committee and staff to ensure that our efforts address key areas of interest.

That concludes my testimony. I would be pleased to answer any questions that the Members of the Committee would have.

Mr. TAUZIN. Thank you.

Colonel Skinner.

STATEMENT OF RICHARD W. SKINNER

Mr. SKINNER. Thank you, Mr. Chairman. I am pleased to have the opportunity to discuss with you a matter that is of critical importance to the Department of Defense: spectrum management and the important relationship we have with the NTIA. I am delighted to share the witness table with Secretary Irving, who is a good friend of the Department of Defense and understands the many challenges that stewardship of America's radio spectrum has presented to us in the past and will no doubt present in the future.

I submitted a statement for the record, but if you will indulge me, I would like to share the Department of Defense's views on the importance of spectrum and the significant responsibilities domestic and international management place on NTIA.

There is increasing pressure for the government to reduce its spectrum usage and make this resource available for private sector development. We have been directed to reallocate spectrum from the government service to the private sector. We believe it is important to consider the impact to national security in these deliberations and understand the full costs in terms of security and dollars spectrum reallocation incurs. We believe the NTIA has an important role in coordinating and exposing these issues as spectrum

reallocation decisions are made. The Department of Defense is committed to using the spectrum allocated to it more efficiently.

On the other hand, military requirements such as development of information technology systems that are less vulnerable to enemy jamming and interference, exploitation of video-based reconnaissance systems and detecting stealthy threats exacerbates an already difficult problem of requiring significant spectrum for these unique national security applications. We hope that the modernization plan required by the draft legislation will be expanded to take a close look at spectrum allocations across the broadest policy areas of national endeavors, and we hope that we will have a process to balance the equities of all of the stakeholders in the process. You may want to consider carefully whether 12 months is an adequate period of time over which to make these deliberations.

Information technology affects almost every aspect of the Department of Defense, from tactical units to the supply lines that support them. Information superiority is at the heart of the Department's vision of future war fighting, a concept of the future we call Joint Vision 2010. Within Joint Vision 2010 we define information superiority as the capability to collect, process, and disseminate an interrupted flow of information while exploiting and/or denying an adversary's ability to do the same.

Radio spectrum is absolutely essential to pursuing and achieving our future vision. Much of our information superiority depends on access to the radio spectrum. The priority our military planners place on mobility, range and speed dictates that a large portion of our information technology be wireless. Consequently, we value access to the radio spectrum because it provides us the essential media for communicating information, unhampered by mechanical connections or weather and other natural phenomena.

While communications is a dominant role, we exploit the radio spectrum for much, much more. Our radars identify potential enemies, using the spectrum to range and track objects in space, on the ground, on the water and in the area. We use the same technology to manage our air operations and provide necessary air traffic control services. Systems like the DOD's Global Positioning System, a constellation of satellites that provides very accurate navigation and timing from space, would not be possible without access to the radio spectrum and the ability to coordinate its use on a national and international basis so that the important signals from these satellites can be received without interference by thousands of military and private sector users, both domestically and internationally.

Secretary Irving's statement addresses the challenges of the modernization of the GPS system, and we are very pleased with his indulgence in that area. The importance of spectrum to the United States military is not lost on our adversaries. We fully expect our enemies to attempt to deny our access to the spectrum in times of war. Moreover, they will monitor and observe our use of the spectrum during peace and the transition from peace to war so they can exploit our vulnerabilities to their own advantage. To this extent, we must have the ability to train in an environment where military spectrum is intentionally jammed and develop those sys-

tems and operational tactics and techniques so we can maintain continuity of operations during attacks on a radio spectrum.

Furthermore, we must be able to deny the use of spectrum by our adversaries to create confusion in the command and control structure and deny them the sensors they are dependent upon.

We are frankly not surprised to find that many of the attributes the Department of Defense values in sensing and communicating using the radio spectrum have private sector and commercial value as well. In fact, many of these commercial systems are in use by our Armed Forces. DOD has a close working relationship and has received extensive support from the NTIA Office of Spectrum Management. This office is essential to achieving the goal of meeting the spectrum needs of both government and industry. We thank NTIA for this and look forward to our continuing relationship.

DOD would also like to thank this committee for its language on reimbursement of spectrum reallocations. We will keep the committee informed on how well it is working. Finally, the Department is ready to work with Congress and NTIA to ensure efficient and effective use of the spectrum into the next millennium. That concludes my statement. I look forward to your questions.

[The prepared statement of Richard W. Skinner follows:]

PREPARED STATEMENT OF COLONEL RICHARD SKINNER, PRINCIPAL DIRECTOR, DEPUTY ASSISTANT SECRETARY OF DEFENSE, (COMMAND, CONTROL, COMMUNICATIONS, INTELLIGENCE AND SURVEILLANCE, RECONNAISSANCE & SPACE), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE FOR COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Thank you Mr. Chairman and members of the Subcommittee. I am pleased to have the opportunity to discuss with you a matter that is of critical importance to the Department of Defense—spectrum management and our relationship with the National Telecommunications and Information Administration (NTIA). Spectrum is a very important resource to the Department of Defense and, as evidenced by this hearing, the Congress as well. I am also delighted that I can share the witness table with Secretary Larry Irving who is a good friend of the Department of Defense and understands the many challenges that stewardship of the America's spectrum has presented us in the past and will no doubt present us in the future. In recognizing the supplier and customer relationship between the NTIA and the Department of Defense, I would be remiss if I didn't highlight as well that the Department of Defense is only one of Secretary Irvings many customers. Perhaps we are the largest or the most demanding but we are only one of more than 50 federal agency customers. So please do not interpret my remarks as representing the entire customer base, there are many more federal spectrum users, each with their own unique perspective on this business.

Why is Spectrum Management Important to Us?

Information and information technology (IT) affect almost every aspect of the Department of Defense, from tactical units to the supply lines that support them. At the heart of the Department's *Joint Vision 2010* is Information Superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting and/or denying an adversary's ability to do the same. As a result, Information Superiority is the key enabler for an entire range of operational concepts, from Dominant Maneuver to Precision Engagement to Focused Logistics to Full-Dimensional Protection. Information profoundly influences the entire range of military endeavors including humanitarian assistance, peacekeeping and coalition operations.

Spectrum is not only necessary, but absolutely essential to achieving JV2010. For example, without assured access to necessary frequencies, we could not have successfully rescued our downed pilots during recent military operations. These rescues required assured spectrum access for all aspects of our search and rescue operation.

Much of our information superiority depends on access to the electromagnetic spectrum. The priority we place on mobility, range, and speed dictates that much of our information technology be wireless and consequently we value access to the

radio frequency spectrum which provides us the essential media for communicating information, unhampered by mechanical connections or weather and other natural phenomena. The U.S. military has an incredible investment in systems that exploit the spectrum. They provide us our interaction between echelons of command and within our units of course, but we exploit the spectrum for much, much more. Our radars identify potential enemies using the spectrum to range and track objects in space, on the ground, on the water, and in the air. We use the same technology to manage our air operations and provide necessary air traffic control services. Systems like the Department of Defense's Global Positioning System—a system of satellites that provides very accurate navigation and timing signals from space—would not be possible without access to spectrum and the ability to coordinate its use on a national and international basis. Of course, the importance of spectrum to the United States Military is not lost on our adversaries. We fully expect our enemies to attempt to deny our access to the spectrum in times of war. Moreover, they will doubtlessly observe our use of the spectrum during peace and the transition from peace to war so they can exploit any vulnerabilities to their own advantage. To this extent, we must have the ability to train and develop those systems and operating tactics and techniques so that we can maintain continuity of operations during attacks on our electromagenetic spectrum. Furthermore, we must be able to deny the use of spectrum by our adversaries to create confusion in the command and control structure and to deny them the sensors they are dependent upon.

We are frankly not surprised to find that the many attributes we value in sensing and communicating using the radio spectrum have private and commercial value as well. In fact, many of these commercial systems are in use by your armed forces.

There is increasing pressure for the government to reduce its spectrum usage and to make this resource available for private sector development. We understand the resolution of who should use and how the spectrum is used is an important one. It is equally important we consider the impact to national security in these deliberations and understand the full costs in terms of security and dollars spectrum reallocation incurs. The DoD is committed to using the spectrum allocated to it more efficiently, but new military requirements for passing video and detecting low observable threats exacerbates an already difficult problem.

National security is made up of several pillars. It is essential to balance our economic security needs with the security your armed forces provides. To do so may require changes in spectrum policy that include:

- Improved processes and procedures for balancing the national security needs of the nation with commercial interests
- Implementing spectrum reallocations using the NTIA spectrum management structure. Legislating reallocation has had a serious impact. Using the normal process provides an opportunity to develop sharing arrangements where possible. We believe that the NTIA process has been extremely responsive to commercial needs while addressing the Department of Defense equities in the process
- Recognizing that unique military spectrum requirements demand exclusive priority access to portions of the RF spectrum while acknowledging that spectrum sharing among competing customers is a desirable national goal
- Establishing and complying with equipment design standards to permit sharing for all users
- Requiring a technical analysis of spectrum use, commercial and federal, when considering resolution of new requirements
- Considering national security and commercial significance in technical analyses of spectrum users' requirements
- Providing all funding to develop, test, train personnel, and deploy replacement systems for incumbent systems during the reallocation process
- Including costs to reengineer displaced systems in the calculation of potential net income from spectrum auctions
- Recognizing that national security priorities may outweigh economic interests in specific cases

Specific Issues

I understand there are several specific issues you would like me to discuss regarding the fee-for-service of NTIA, the privatization and outsourcing of NTIA laboratories, and the examination of the NTIA by the Government Accounting Office. Let me address each of the issues as I understand them, briefly.

The proposal to raise the fees paid by DoD and other federal agencies to NTIA for its spectrum management services misses the mark in our opinion. In this era of ever more complicated calls for spectrum allocation, DoD is not the only entity that benefits from NTIA's work on DoD matters. Moreover, as my prior discussion

makes clear, the Office of Spectrum Management performs many functions that are not solely for the benefit of a particular user. Both the civilian and military, government and private worlds benefit from a robust and well managed NTIA. Finally, the "business school" logic of fee for service is to restrain the excessive use of the good or to give users a way to evaluate the cost of the service against ready alternatives. In this case, DoD must use NTIA for spectrum management, there are no alternative service providers, and neither of those rationales is applicable. The current arrangement works, and I would leave it as it is.

With regard to privatization of the NTIA laboratories, we believe this is a decision that NTIA must make on its own, after consultation with its laboratory customers. In the Department of Defense's outsourcing initiatives, we have worried that we could erode the pool of government expertise required to address detailed and complex government matters. We would hope that NTIA will consider that issue carefully. DoD uses the laboratories on a cost reimbursable basis. The NTIA laboratory capabilities are world class, and we hope that any future change would improve their status. A transition of laboratory operations must address customer concerns for national security and the needs to protect the trade secrets and intellectual property of the government and its private sector partners. So, our organizational conflict of interest concerns and the continued ability to provide laboratory support in matters where secrecy is as important as technical excellence must be addressed in the future laboratory arrangement. Of course, any change in the laboratory arrangement should result in maintaining or improving the quality and responsiveness that the government labs provide.

With regard to the GAO report and modernization plan required in the draft bill, we are enthusiastic proponents of modernization and process improvement through business process reengineering. However, we have equities that must be protected to successfully accomplish our mission. We hope that in the GAO process we will have an opportunity to comment on the report, either directly with GAO or via NTIA. We also hope to have an opportunity to comment on, or perhaps even participate in the development of, the modernization plan. Although I said I would not attempt to represent NTIA's many other customers, I would expect that at least some of these agencies would want to engage as well.

Conclusion

DoD has a close working relationship and has received extensive support from the NTIA Office of Spectrum Management. This Office is essential to achieving the goal of meeting the spectrum needs of both government and industry. We thank them for this and look forward to our continuing relationship.

DoD also would like to thank this Committee for the language on reimbursement for spectrum reallocations. We will keep the Committee informed on how well it is working.

The Department is ready to work with Congress and NTIA to assure efficient and effective us of the spectrum into the next millenium.

Mr. TAUZIN. Thank you very much, Colonel.

Our next witness is Mr. Harris Miller.

STATEMENT OF HARRIS MILLER

Mr. MILLER. Thank you. Thank you, Mr. Chairman and members of the subcommittee. I am here representing the 11,000 companies that are members of the information technology economy. It is an honor to appear before your subcommittee to discuss what I believe to be the next Y2K issue for our country and our global information and technology community; namely, critical information infrastructure protection.

Information technology now represents over 6 percent of global GDP, the spending volume of more than $1.8 trillion, according to Digital Planet, a report recently released by the World Information Technology and Services Alliance. From China to Mexico, from Argentina to Germany, countries have come to recognize that IT is the engine of national development, accelerating the expansion of business and investment while acting as a buffer against economic downturns.

However, the Y2K software glitch and other well-publicized episodes of natural or man-made disasters have also triggered an awareness of the importance of and vulnerabilities posed by interruptions to information technology. These threats come in numerous guises: mischief-minded hackers, disgruntled employees, corporate spies, cyber criminals, cyber terrorists and unfriendly nations.

A recent Computer Security Institute survey reports that 62 percent of companies have experienced computer breaches. Fifty-one percent of respondents reported financial losses due to computer security problems. Criminal hacking losses of the 163 responding organizations was placed at $123 million in 1998 and is climbing at an extraordinary pace. The Institute found that system penetration by outsiders has risen in each of the past 3 years, as has unauthorized access by insiders. Twenty-six percent of the CSI respondents reported theft of proprietary information, and 27 percent reported financial fraud. Twenty percent reported unauthorized use or misuse of Websites.

Virus episodes such as the recent Melissa and Chernobyl are becoming much too frequent. The Antivirus Research Institute estimates that new viruses are being launched at the rate of 10 to 15 per day, and that over 2,400 currently exist. Thirty-five percent are considered to be intentionally disruptive.

And, of course, not all threats are man-made. As has been demonstrated by the Red River flooding, the Kobe earthquake, the North Ridge earthquake in California, and Hurricane Andrew in 1992, natural disasters also lead information technology disasters in disruptions. The Kobe earthquake caused over 5,000 deaths, damaged or destroyed over 180,000 buildings, and left 300,000 people homeless. But it is also important to remember that the telecommunications and computer infrastructures in that area were out for weeks and even months.

And then, of course, there is the Y2K issue itself. The sum and substance of this, Mr. Chairman, is that our country, our economy, and the global economy have difficult challenges ahead. In the cyber realm, as we know, ambiguity reigns supreme. What makes our new environment so different? Some of the factors include the following: increasing technological and environmental complexity; the boundless nature of the Internet; ambiguous laws; the anonymity of adversaries; conflicting responsibilities and jurisdiction; limited consequence management preparedness; low levels of awareness, particularly by those in senior management in the private sector and government; and limited human resources to deal with this challenge.

Understanding the challenge, I do believe that NTIA enjoys the opportunity to play a very important role in helping the Nation achieve critical information infrastructure protection. Assessing the CIIP role for NTIA and other government agencies, it comes down to a simple issue. Our new information-based economy must be protected and preserved. Participants and users must understand that along with the obvious benefits of living in this IT age are corresponding commitments to protect the information technology system. The societal stakes involved in critical information infrastruc-

ture protection compel both government and private industry to seek common ground on the issue.

The road to this common ground, Mr. Chairman, will not be easy to reach. While the ultimate ends are shared between government and the private sector, the policies that each will develop in order to provide the protection could be quite different. For instance, government policy may seek to establish very stringent internal- and external-directed rules to protect cyber infrastructure. The private sector, however, is going to look for threats to be responded to in terms of appropriate business responses.

To deal with these different directions, there must be increased communications, and that is very important. In my written statement I have included a series of first principles necessary to achieve the proper balance between the government and industry desires. Part of this is working together with the government.

Our Association, for example, announced a major effort in partnership with the Justice Department and Attorney General Reno focusing on cyber citizen partnership to educate both government and the private sector regarding the importance of cyber protection. While the IT is frequently uncomfortable in working with government agencies on policy issues, the agency we are usually most comfortable with is DOC. It is for this reason that ITAA and the information technology industry supports the selection and continued mission of NTIA within DOC as the lead agency for and primary liaison to our industry.

The private commercial sector owns, operates and manages over 90 percent of the information and communications infrastructure. As such, it is appropriate that a civilian agency such as NTIA focus on the advancement of U.S. industry, and the U.S. economy be assigned the lead for working and collaborating with the innovative companies that have responsibility for and manage these important elements of our economy.

We look forward to cooperating with all agencies throughout the government involved in the CIA challenge, yet we feel strongly that NTIA is the proper representative to work with our industry to build the necessary levels of cooperation to help develop the national infrastructure protection plan. It has the knowledge, experience and relationships necessary.

We very much encourage this committee to include funding in the NTIA reauthorization so that they can carry out their mission in the CIIP area, and we look forward to working with you and other members of the subcommittee in this area, Mr. Chairman.

[The prepared statement of Harris Miller follows:]

PREPARED STATEMENT OF HARRIS N. MILLER, PRESIDENT, INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA

Introduction

I am Harris Miller, President of the Information Technology Association of America (ITAA), representing over 11,000 direct and affiliate member companies in the information technology (IT) industry—the enablers of the information economy. Our members are located in every state in the United States, and range from the smallest IT start-ups to industry leaders in the custom software, services, systems integration, telecommunications, Internet, and computer consulting fields. These firms are listed on the ITAA website at www.itaa.org.

It is an honor to appear before your Subcommittee again, Chairman Tauzin. I want to commend you and your colleagues for inviting me to discuss what I describe as the next Y2K—Critical Information Infrastructure Protection.

Information technology represents over 6 percent of global gross domestic product (GDP), a spending volume of more than $1.8 trillion, and over 8% of US GDP, according to Digital Planet, a report recently released by the World Information Technology and Services Alliance (WITSA), a group of 38 IT trade associations around the world (I am proud to serve as president of the WITSA organization). Enormous in its own right, these Digital Planet figures mask the contribution made by this technology to the growth, competitiveness and vitality of other industries. From China to Mexico, from Argentina to Germany, countries have come to recognize that information technology is the engine of national development, accelerating the expansion of business opportunity and investment while acting as a buffer against economic downturns.

The Year 2000 software glitch and other well-publicized episodes of natural or man-made disasters have also triggered an awareness of the importance of and vulnerabilities posed by disruptions to information technology. The threat comes in numerous guises. Mischief minded hackers. Disgruntled employees. Corporate spies. Cyber criminals. Terrorists. Unfriendly nations.

Aggressors attack at the point of maximum leverage. For modern society, this means critical infrastructure—transportation, telecommunications, oil and gas distribution, emergency services, water, electric power, finance and government operations. A critical information infrastructure supports all of these vital delivery systems and becomes itself a target of opportunity for terrorists, adversary nations, criminal organizations, and non-state actors. Disrupting the underlying information infrastructure of a transportation or finance system often can be as effective or even more effective than disrupting the physical infrastructure. Why blow up a power grid, when destroying the computers which control the power grid will have the same impact?

As recently as last week, the International Institute for Strategic Studies (IISS) published a study on this topic citing one expert claiming he could bring down the U.S. information infrastructure with 10 computer specialists and in 90 days time. This potential vulnerability—even if overstated—raises numerous difficult questions for industry and government about how to best provide critical information infrastructure protection.

A recent Computer Security Institute (CSI) survey reports 62 percent of companies have experienced computer breaches; 51 percent of respondents reported financial losses due to computer security problems; criminal hacking losses of the 163 responding organizations was placed at $123 million in 1998 and is climbing at an extraordinary pace. The Institute found that system penetration by outsiders has risen in each of the past three years as has unauthorized access by insiders. Twenty-six percent of respondents in the CSI study reported theft of proprietary information and 27 percent reported financial fraud. Twenty percent reported unauthorized use or misuse of websites.

Virus episodes like Melissa and Chernobyl are becoming much too frequent. The Symantec Anti-Virus Research Center estimates that new viruses are being launched at a rate of 10 to 15 per day and that over 2400 currently exist. Thirty-five percent are considered to be intentionally destructive.

Not all threats are man-made. As has been demonstrated by the 1997 Red River flooding of Grand Forks, North Dakota; the 1995 Kobe earthquake in Japan; and the 1994 Northridge earthquake in California; and South Florida's Hurricane Andrew in 1992, natural disasters pose substantial threats to both major systems themselves and the critical information infrastructure undergirding. This is indicative of the fact that the physical element of the information infrastructure requires a similar level of attention and concern. The Kobe earthquake, for instance, caused over 5,000 deaths, damaged or destroyed 180,000 buildings and left 300,000 people homeless. Total damages reached $147 billion. Telecommunications and computer infrastructures were out of commission for weeks and months.

And then there is that set of "unintended consequences" associated with a new and dynamic period in the evolution of technology. I refer to the Year 2000 computer bug as exhibit number one. As a global information economy, we stand at the very edge of the Year 2000 divide. Just eight months remain for companies all over the world to complete their Y2K repairs. How successfully countries will make this transition is the subject of much speculation. The only sure bet for Y2K prognosticators is that no one knows for sure how this situation will play out. Year 2000 underscores the interconnectedness of society and its computers and the dependence of one on the other. Where we do not have all the technology bases covered, we have social, economic, and political vulnerability instead.

We have difficult challenges ahead. In the cyber realm, ambiguity reigns supreme. What makes our new environment so different? Some of the factors include:

- Increasing technological and environmental complexity—new technologies are replacing "old" ones at a breathtaking pace as hundreds of thousands of new players enter cyberspace on an almost daily basis;
- Boundless environment—geographic boundaries are irrelevant in cyberspace raising jurisdictional conflicts;
- Ambiguous laws;
- Anonymous adversaries—The anonymous nature of the Internet combined with a lack of geographic boundaries makes it extremely difficult to distinguish between nuisance hackers, vandals, criminals, terrorists and nation-states. This results in indistinguishable motives or intentions;
- Conflicting responsibilities and jurisdictions—while cyberspace is boundless, turf battles abound;
- Limited consequence management preparedness—if progress for preparations for Y2K and the recent Melissa and Chernobyl viruses are any indication, worldwide, individuals and enterprises are unprepared to manage contingencies and consequences of such incidents;
- Low levels of awareness—it was, and is still, difficult to get leaders to focus on Y2K as a major issue. We must now take pains to point out that Y2K is solely one "incident" on the continuum of potential vulnerabilities to our critical systems: the proverbial tip of the iceberg. A significant hurdle to meeting the most basic challenges, however, is low levels of awareness and understanding. These issues must be raised to the executive level;
- Limited human resources—The public and private sectors continue to struggle to find the skilled workers to manage the resources they currently have. Assuring our information infrastructures calls for more highly specialized individuals who are in extremely limited supply.

Today you have asked me to talk about the reauthorization of the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce (DOC) and role that we think this agency can play in helping the nation achieve its critical information infrastructure protection goals. I believe that NTIA enjoys the opportunity to play a critical role in helping the nation achieve Critical Information Infrastructure Protection. Before I speak specifically about NTIA, I will offer a broader conceptual framework on how we see government and industry working together on this issue. I will provide you details on the specifics of ITAA's CIIP program. I will then turn my attention to NTIA.

Government and Industry: Seeking Common Ground

Assessing the ultimate CIIP roles for NTIA, other government agencies and the private sector is really very simple: our new information-based assets must be protected and preserved. The proliferation of low cost computers and networks have spread information technology to every quarter of society. As technologies have advanced and been implemented, we have seen enormous payoffs in the form of increased efficiency, increased productivity and newfound prosperity. Chairman Greenspan recently credited large investments being made in computers and other high-tech products for the dramatic boost in the nation's productivity. Even previously skeptical economists now concede that IT driven productivity increases have enabled our country to have what they said we could not have: high growth, low unemployment, low inflation, growth in real wages.

Rights come with responsibilities. Participants and users must understand that along with the obvious benefits of information technology are corresponding commitments to protect IT. The societal stakes involved in critical information protection compel government and industry to seek common ground on the issue.

The road to this common ground will never be, of course, a straight line. On the contrary, while the ends may be commonly shared, the policies that government and industry will develop in order to provide this protection are likely to be quite different.

For instance, government policy may seek to establish both internal and externally directed standards to protect infrastructure elements from physical or cyber attack, to require systems to detect when attacks are imminent or underway, to develop processes to react to the attack, and to reestablish the critical service. By definition, if the service has been deemed critical to the nation, then the federal, state and local governments will have increased interest in the operation, management and protection of the private businesses and services which comprise the infrastructure elements. The manner in which this government concern is manifested can have a significant effect on private sector interests.

Similarly, industry can be expected to react to infrastructure threats in appropriate ways, guided by sound business considerations. Individual companies will make infrastructure protection investments commensurate with the risk management principles in their industries. Government policies that impose protection standards more stringent than those inherent in the private sector risk mitigation process may not be acceptable. Additionally, requirements for reporting incidents to government operations centers and responding to government directed reconstitution plans may impose burdens that need to be developed in consultation with the private sector.

Private sector firms face other real world pressures in formulating a CIIP response. First, companies run the significant risk of negative publicity and exposure. Companies are concerned that revealing and admitting past mistakes, shortcomings, negative experiences or incidents can open them up for criticism from the press, their competitors and their shareholders. Along the same lines, and for good reason, companies are loath to share proprietary or privileged corporate information. Additionally, firms run the risk of harming consumer, customer, partner and investor confidence. The private sector is also unprepared to share information and/or experiences out of fear that such information will be misused, abused or released to the public by the government or competitors. Lastly, with the focus in today's corporate world on the immediate bottom line, most firms see no clear short-term return on their information sharing investment.

To minimize the likelihood of, minimize the possible impact from, or prepare a response to a coordinated, comprehensive attack on critical US infrastructure will require coordinated, comprehensive teamwork by government and industry. No matter what the business or political pressures, we all have a stake in protecting our information infrastructure. The nature of that teamwork is being decided through national debate, substantive analysis and constructive dialogue. As we look ahead, our nation is in need of new modes of cooperation, collaboration and experience sharing among the private sector and between the public and private sectors. A well prepared and informed private sector can work with government to find the proper balance which optimizes the government's need to protect the critical infrastructure with business' need to manage risks appropriately.

Significant reservations on the part of both private industry and government to fully collaborate on these important issues exist, however, which ITAA is attempting to address from both a theoretical and practical viewpoint.

CIIP: Establishing First Principles

In developing industry positions on national CIP issues, ITAA has established an initial list of general principles that will guide the development of future policy.

- The protection of the national information infrastructure must be based on the minimum amount of government (federal, state, and local) regulation as is feasible.
- The cost of protecting the national information infrastructure must be kept to the lowest level possible commensurate with the threat and the consequences of attack. Parties must be able to differentiate between potential vulnerabilities and specific threats.
- Industry owns and operates the Global Information Infrastructure and, as such, has primary responsibility for CIIP requirements, design and implementation.
- Industry and government share an interest in the proliferation of a free and open Internet, electronic commerce, other value added networks, and an efficient, effective information infrastructure generally.
- In protecting these resources, the specific and immediate priorities of government and industry are apt to diverge.
- Industry will be guided by business considerations to protect itself against physical and cyber-attack as the threat to the information infrastructure evolves.
- Where corrective CIIP action is required to protect the public good, government must identify such instances and create appropriate funding mechanisms.

The Internet and electronic commerce are inherently global in nature; therefore, critical information protection will require collaboration among international bodies.

- Critical information protection measures much be commensurate with the threat involved; risks must be appropriately identified and managed but not magnified or embellished.
- Positive interaction between government and industry is essential. Among issues which will require on-going communication and assessment is the need to balance the Constitutional right to privacy with national security concerns.
- Industry must monitor the private sector portion of the national information infrastructure and cooperate both internally and with government in reporting and exchanging information concerning threats, attacks, and protective meas-

ures. Coordination among principals must facilitate creation of early warning systems.

- In creating the information infrastructure, as well as attendant tools and technologies, industry must be provided safe harbor protections and its works viewed as incidental to losses caused by criminal or malicious misbehavior or natural disasters.
- Distinctions must be made among cyber-mischief, cyber-crime and cyber-war to clarify jurisdictional issues and determine appropriate responses. The adequacy of current laws to prevent these threats must be reviewed.
- Existing laws must be adapted as necessary to allow appropriate levels of information sharing among companies, and between the private sector and government.
- Current policy in areas such as the R&E tax credit, software encryption, workforce training, and longterm government research and development funding must be reviewed in light of common CIIP goals and objectives.
- Law enforcement agencies must gain sufficient cyber-crime expertise to combat specific threats and to investigate specific criminal acts.
- Emergency response organizations must gain sufficient disaster recovery expertise to minimize the effect of catastrophic events on the information infrastructure.
- Implementing this diverse set of principles will require substantial work.

Difficult Issues Remain

At this nascent stage, many questions remain unanswered:

- What are the criteria for determining the individual elements of the critical information infrastructure, and who is involved in the determination?
- What should be the process/mechanism by which the government will provide threat, indications and warning information to critical information infrastructure companies?
- What legislative remedies are necessary to overcome the current legal barriers to information sharing?
- Will shared information be protected from FOIA requests?
- What threshold should be established for reporting anomalous activity? What type of reporting will be required, given that industry will be motivated to monitor and protect itself against cyber-attack for business reasons, and how will reported information be protected?
- What government restrictions/legislation must be modified or lifted so that private sector companies may implement active cyber-defense and/or counter-measures (i.e., anti-trust provisions leading to NSTAC-like organizations)?
- What type of organization(s) should plan and execute the strategy for critical information infrastructure defense?
- What policy determinations are required to distinguish between law enforcement and national security (warfare) jurisdictions as a result of attacks on critical information infrastructure elements?
- How should industry organize itself to represent private sector views, to exchange relevant "lessons learned," and to participate in policy development? Given that IT is both a vertical industry sector itself, but also undergirds all the other vertical sectors, what should be the relationship between the IT sector and the others?
- What considerations must be allowed for those elements of the critical infrastructure which are foreign controlled or are part of multi-national businesses, considering that most infrastructures are international in nature?
- How should the information technology private sector assess the implications of liability and insurance for critical services?
- Is there a sufficient research and development effort underway to improve the ability of the private sector to monitor and protect its designated critical elements? Who should fund this effort? How should R&D information be distributed?
- If information system security becomes a competitive market differentiator, how will the private sector accommodate the needs of the government for infrastructure protection while maintaining market competitiveness?
- How does our country develop a corps of IT workers with particular skills to focus on security and infrastructure protection, particularly in light of the overall IT workforce shortage?

In addition to substantive legal and policy issues, less tangible concerns must also be addressed, particularly the development of trust—within the private sector and between the private sector and government. ITAA and its member companies are working with government to help build the necessary bridges. I would like to describe briefly a few of these initiatives now.

ITAA and CIIP

ITAA is taking a number of actions, has initiated programs, and motivated its membership to address the CIIP challenges that the nation and our industry face. ITAA realized the importance of this issue and took it on over two years ago with the establishment of a dedicated Critical Information Protection Task Group to examine and analyze policy developments in this area and to offer input into the policy process. In the past year ITAA's Critical Information Protection Task Group has continued its mission of providing ITAA outreach and education to Administration officials, federal civilian, military, national security, and law enforcement agencies, Congress, the media, international organizations, and the public on the issues of critical information protection and assurance. The CIP Task Group has been very active particularly in the wake of Presidential Decision Directive 63 (PDD63), which was issued last spring. The activity of our industry Task Group is increasing as federal agencies and industry grapple with the implementation of PDD63 which has provided the initial outline and direction for the development of a more comprehensive national infrastructure protection strategy and plan.

In the past 12 months, much has happened. Through the Task Group, our members have been active in what has been the rapid development of information infrastructure security issues and policy. Our organization has produced one of the first concerted industry efforts to address CIP issues. We have issued white papers focused on critical information infrastructure protection. We prepared an industry response to President's Commission on Critical Infrastructure Protection (PCCIP) report and recommendations when they were released in the fall of 1997.

Since then, we have held frequent meetings with representatives across the government to educate, discuss and provide input into the evolving national policy developments.

In February of this year, ITAA was selected as a Sector Coordinator by the Department of Commerce for the Information and Communications infrastructure sector, in conjunction with two other associations focused primarily on the telecommunications industry—the US Telephone Association and the Telecommunications Industry Association. As a Sector Coordinator, we are continuing to work with the federal government and, in particular, with NTIA on the implementation of PDD 63.

Education and outreach will be critical to the success of our efforts. This March, ITAA created the framework for a new Cybercitizen Partnership in conjunction with Attorney General Janet Reno. The Partnership will focus on promoting individual responsibility in cyberspace and creating a public-private sector forum for exchange and cooperation. Through the Partnership, private sector representatives hope to work with federal partners, including the Attorney General, the Department of Justice and National Security Agency representatives, on development of a critical infrastructure protection education and awareness campaign and other initiatives. In addition to an awareness campaign we will be coordinating with the FBI's National Infrastructure Protection Center to identify and coordinate industry representation and participation in Center activities to build the communication and trust that will be so essential in moving forward.

Also of note: In October, 1998, I was appointed by the World Information Technology and Services Alliance (WITSA) to chair a new task force on critical information infrastructure. WITSA has been quick to recognize the need for industry to take a proactive role in protecting information infrastructures. At a meeting in Taipei earlier this spring, WITSA members approved a policy statement which encourages government-industry dialogue at the local, national and international levels.

While both private industry and governments at all levels agree that there is a growing need to address the challenges of CIP, there is little agreement on what measures, if any, should be taken to protect those infrastructures. At the heart of the Statement is the message that industry has a vested interest in anticipating and confronting infrastructure threats in appropriate ways, guided by business considerations. While countries have very different ways of approaching CIP, WITSA believes that it is of critical importance that governments and international organizations always cooperate fully with industry in shaping CIP policy.

In all honesty, we at ITAA face a daunting job of convincing the IT industry to work with these agencies on these initiatives. It is a challenge we must step up to if we are to achieve any degree of success in opening lines of communication. Our industry continues to have reservations about working too closely with the federal law enforcement and national security community, particularly with the scars of the encryption conflict still fresh.

ITAA Endorses Role of NTIA

While the IT industry is frequently uncomfortable in working with government agencies on policy issues, the agency we are usually most comfortable with is DOC. It is for this reason that ITAA and the information technology industry support the selection and continued mission of NTIA, within DOC, as the lead agency for and primary liaison to our industry for CIIP. While the national security implications of information infrastructure security and assurance are clear, it must be remembered that it is the private commercial sector that owns, operates and manages over 90% of the nation's information and communications infrastructure. As such it is appropriate that a civilian agency, focused on the advancement of US industry and the US economy, be assigned the lead for working and collaborating with the innovative companies that have responsibility for and manage these important elements of our economy.

ITAA and our members will continue to look forward to cooperating with all agencies and elements of government to meet the CIIP challenges. Yet we feel that NTIA is the proper representative to work with our industry to begin to build the necessary levels of cooperation to help develop the National Infrastructure Protection Plan. Within DOC, NTIA has the knowledge of and experience and relationships with the IT and Communications industries that are necessary.

Over the past two years, ITAA, its members and the IT industry have begun to develop collegial and constructive relationships with the leadership and staff of the Commerce Department, NTIA and the Critical Information Infrastructure Assurance Program Office at NTIA in their capacity as the lead agency for our industry. While significant, positive levels of trust, cooperation and communication have been developing, the important work that must be done has barely started. This is not because of any lack of desire or ability on behalf of NTIA or the CIIAP Office, but because they have been asked to do their job without the necessary resources. They lack even the minimum funding and support that is necessary for them to carry out their mission. It is essential that the necessary programmatic funding and resources be appropriated to the NTIA to carry out its mission. $3.5 million is a small price to pay for getting these important programs moving down the track.

Conclusion

The U.S. and much of the world are building their economic house on an information technology foundation. This is extremely positive approach to take, delivering tangible benefits to a fast growing percentage of the world's population. As we build this house which reaches to a better, more prosperous and democratic future, we must be ever vigilant of cracks in this structure. If Year 2000 is the first challenge to place our economic house at risk, failure to adopt a rigorous approach to CIIP will be the second. I have offered a conceptual framework on which government and industry can work towards common ground. A framework which recognizes inherent differences and builds on mutual strengths. A framework in which ITAA continues to play a leadership role. A framework in which NTIA must now be allowed to step to the forefront. As you consider the NTIA Reauthorization Act of 1999 and the future role for the agency, I encourage you to make this possible.

Mr. TAUZIN. Thank you, Mr. Miller.

Next is Mr. Rogers.

STATEMENT OF JAMES A. ROGERS

Mr. ROGERS. Thank you, Mr. Chairman. My name is Jim Rogers and I am retired manager of UPS. I have been asked by UPS to describe to you the spectrum management dilemma that UPS experienced as customers for package delivery started calling for advanced information and telecommunications services such as tracking, tracing, and electronic signatures.

The company also has submitted a letter and has asked that it be made part of the this subcommittee's record.

[The letter referred to follows:]

UNITED PARCEL SERVICE
May 10, 1999

The Honorable BILLY TAUZIN
Chairman
Subcommittee on Telecommunications, Trade and Consumer Protection
Commerce Committee
2125 Rayburn House Office Building
U.S. House of Representatives
Washington D.C. 20515

DEAR MR. CHAIRMAN: On behalf of United Parcel Service, I want to extend my appreciation to you and the subcommittee for holding the hearing on Tuesday, May 11, 1999, on NTIA and its spectrum activities, particularly those involving government use of spectrum to compete with the private sector. UPS also appreciates the invitation to provide a witness. Jim Rogers, who will be speaking for UPS at that hearing, is best suited to explain our history on this matter in that he was the person responsible for handling the agency and legislative issues associated with the development of 220 MHz spectrum.

UPS believes that the current situation needs to be corrected. The case that will be laid out by Jim Rogers at the hearing clearly provides convincing evidence that our nation's spectrum policy has evolved into an unacceptable situation as it pertains to the United States Postal Service (USPS) and its efforts to enter into private commercial markets. UPS, as a commercial enterprise, must fulfill its spectrum needs by applying for licenses issued by the Federal Communications Commission. The Postal Service—UPS's primary competitor in the marketplace—is given government agency status, and is able to obtain from NTIA the frequencies it needs to compete in the marketplace against the private sector.

The disparity in treatment creates an enormous competitive advantage. UPS has had to live with the delays there are inherent in FCC proceedings. The Postal Service does not. UPS has to pay for licenses by bidding for them at auction. The Postal Service gets its licenses for free.

The competitive advantage enjoyed by the Postal Service is not merely theoretical. As I have illustrated, UPS paid a significant price, in both dollars and opportunity costs, to develop the system and obtain the frequencies needed to compete against the Postal Service. In contrast, the Postal Service has avoided paying the costs that UPS has borne, and has instead been able to acquire its frequencies without charge.

The solution is both fair and simple.

First, and at a minimum, when the Postal Service needs radio licenses in support of its competitive activities, it should not be treated as a Government agency by NTIA. It should be forced to go to the FCC and compete against everyone else for scarce frequencies. It is one thing to give the Government users of the spectrum the access that they need to serve the public interest. It is another thing altogether to grant the Postal Service preferential rights of access, under preferential terms and conditions, when it's competing against private business.

Second, a determination as to whether a Postal Service application is for radio frequencies to support competitive ventures should be made in a public proceeding, and should be subject to challenge in the courts. It is not appropriate that this determination be made by the IRAC—on which the Postal Service sits. Nor is it appropriate that it be made without public scrutiny, or without accountability. The Postal Service should be subject to the same rules as the rest of us when it is acquiring frequencies in support of its competitive ventures.

Finally, in my view, the Postal Service should be removed from the IRAC altogether. To the extent that it is permitted to remain a member, it will be in a position to influence and use leverage over the other members of IRAC in order to benefit its own competitive objectives.

Sincerely,

KEN CHURCHILL,
Vice President, Corporate Public Affairs

Mr. ROGERS. As most of you know, UPS is the largest package delivery service in the United States. We have grown from a local service that delivers packages for local merchants to their customers to a worldwide enterprise that delivers more than 12 million packages per day around the globe. UPS customers are demanding ever more information about their shipments. To meet that need, UPS has transformed itself from a large package delivery service to a technology-intensive global communications com-

pany that makes extensive use of radio spectrum to transmit package information data.

In this effort, we discovered a company in Oregon that was engaged in the business of building LORAN equipment for aircraft and was doing some exciting work with amplitude compandered single sideband. It is ACSB. This company, IIMorrow, was interested in expanding its market beyond aircraft instrumentation, and we realized that we would both benefit from accelerating IIMorrow's development of ACSB.

In order to maximize that benefit, UPS eventually acquired IIMorrow. Developing the equipment was one thing; having frequencies on which to operate was another. So we began discussions with the FCC to determine whether there were frequencies available to support the applications we were interested in using.

On a separate track, the FCC began the proceedings to reallocate the 220-222 megahertz band. Many of you remember that proceeding. The band had been utilized on a secondary basis by amateurs, and the reallocation proceeding got bogged down as the amateurs resisted these efforts. The Commission's notice of proposed rulemaking was released in December 1998, but a final report and order was not issued until mid-1991.

While this was proceeding, UPS successfully conducted a test in the Chicago area using frequencies in the 220-222 megahertz band that were licensed for our use on an experimental basis.

In 1992, the FCC adopted its pioneer preference rules. While we did receive tentative designation as a pioneer, the Commission ultimately declined to give us the award. We were getting close to the time when we needed a track-and-trace system, but a couple of things occurred. First, the FCC commenced to hold a series of lotteries to issue licenses in the 220-222 band. The geographic area covered by these licenses was local. We spent more than $50,000 to participate in these lotteries, and while we did win some, we had nowhere near the nationwide coverage we needed.

In 1993 Congress enacted amendments to the Communications Act of 1934, giving the authority to auction licenses based on the values that are placed on these frequencies. We do not quarrel with the determination that auctioning licenses has many advantages over lotteries or comparative hearings. One of the side effects of enacting the auction statute was a long delay in the Commission's proceeding with respect to issuing nationwide licenses in the 220-222 megahertz band.

All of the activity that I have described took place between 1988 and 1994. The upshot is that UPS eventually invested over $40 million in its efforts to develop a data network using the 220-222 megahertz band, and it didn't work.

We couldn't wait. We had to get into the market. So we entered into agreements with cellular licenses around the country to utilize cellular frequencies for the track-and-trace services our customers were demanding.

Today UPS is the No. 1 user of cellular services in the U.S. UPS's primary competitor, the U.S. Postal Service, did not sit idly by. In 1996 the Postal Service applied for and obtained licenses to utilize frequencies in the 220-222 band. This is the same band we spent more than $40 million unsuccessfully to obtain permission to

use. To get its licenses, the Postal Service didn't participate in an auction. It filed an application with the Interagency Radio Advisory Committee, the IRAC. IRAC advised NTIA with respect to the need for government users to obtain frequency.

Who sits on IRAC? Among its members is the Postal Service. The IRAC is composed of government users who work together to ensure the spectrum needs of all government users are met. The Postal Service sits as a member of IRAC and participates in the process of advising NTIA on whether or not its licenses should be granted. It is an applicant, advocate, and a juror.

I suppose that would be fine if it weren't for the fact that approximately $12 billion per year of the Postal Service revenues come from providing services in competition with the private sector, including UPS. But when the Postal Service is engaged in competitive activities, its membership on the IRAC gives it a huge competitive advantage. The disparity between UPS and Postal Service creates an enormous competitive advantage. UPS had to live with the delays inherent in the FCC proceedings. The Postal Service did not. UPS had to pay for licenses by bidding for them at an auction or paying cellular fees now. The Postal Service gets its licenses for free.

The competitive advantage enjoyed by the Postal Service is not merely theoretical. UPS paid a significant price in both dollars and opportunity costs developing the system and hoping to obtain the frequencies needed to compete. In contrast, the Postal Service has avoided paying the cost UPS has borne, and has instead been able to acquire its frequencies without charge.

The solution is fair and simple. First and at a minimum, when the Postal Service needs radio licenses in support of its competitive activities, it should not be treated as a government agency by NTIA. It should be forced to go to the FCC and compete against everyone else for scarce frequencies. It is one thing to give the government users of the spectrum the access they need to serve the public interest. It is another thing to grant the Postal Service preferential rights of access under preferential terms and conditions when it is competing against private businesses.

Second, determination as to whether a Postal Service application is for radio frequencies to support competitive ventures should be made in a public proceeding and should be subject to challenge in the courts. It is not appropriate that this determination be made by the IRAC on which the Postal Service sits. The Postal Service should be subject to the same rules as the rest of us when it is requiring frequencies in supports of its competitive ventures.

The Postal Service should be removed from the IRAC altogether. To the extent that it is permitted to remain a member, it will be in a position to influence and use leverage over the other members of IRAC in order to benefit its own competitive services.

This ends my prepared remarks. I will be happy to answer any questions that you have.

[The prepared statement of James A. Rogers follows:]

PREPARED STATEMENT OF JAMES A. ROGERS, RETIRED REPRESENTATIVE, UNITED PARCEL SERVICE

Introduction

Good afternoon, Mr. Chairman and Members of the Subcommittee. I am pleased to have the opportunity to appear before you today. My name is Jim Rogers, and I am a retired employee of United Parcel Service. I have been asked by UPS to describe for you the spectrum dilemma that UPS experienced as customers for package delivery started calling for advanced information and telecommunications serviices, such as tracking and tracing, and electronic signatures. Over the last decade, it had been my responsibility to coordinate UPS's spectrum activities before the FCC, and later, the NTIA. UPS has asked me to give you a brief narration of what happened. The Company has also submitted a letter and has asked that it be made part of the Subcommittee's record.

Background

As most of you know, UPS is the largest package delivery service in the United States. We have grown from a local service that delivered packages for local merchants to their customers, to a worldwide enterprise that delivers more than 12 million packages per day around the globe. Today we have a fleet of more than 500 aircraft, 157,000 ground vehicles, and more than 325,000 employees to meet the needs of our customers.

Those needs have gotten far more sophisticated—particularly in the last 15 years. Today's shippers want to know whether their shipments have arrived, and if not, where they are, and when they'll get there. They need information about their shipments.

That's what UPS's customers are demanding. To meet that need, UPS has transformed itself from a large package delivery service to a technology-intensive global communications company that makes extensive use of the radio spectrum.

UPS Experience

By the mid 1980's, our customers were telling us that we needed to be able to give them up-to-the minute information regarding the status of their shipments. In response, we began the preliminary efforts to identify radio-based technologies that could fill this need, and give us the ability to track our vehicles.

We discovered a company in Oregon that was engaged in the business of building LORAN equipment for aircraft and terrestrial uses, and was doing some exciting work with a new technology called ACSB—amplitude compandered single sideband. This company—IIMorrow—was interested in expanding its market beyond aircraft instrumentation, and we quickly realized that we would both benefit from accelerating IIMorrow's development of ACSB. In order to maximize that benefit, UPS acquired IIMorrow

But having the equipment was one thing, and having frequencies on which to operate was another. So we began discussions with the FCC to determine whether there were frequencies available that could support the applications we were interested in using. The FCC was familiar with IIMorrow's work on ACSB technology, and in 1988 encouraged us to look at the 220-222 MHz band as a possible "home" for a new tracking and tracing service. As our customers continued to push us for increased information about their shipments, we continued to push forward with the development of ACSB technology to operate in the 220-222 MHz band. UPS successfully conducted a test in the Chicago area using frequencies that were licensed for our use on an experimental basis.

On a separate track, the FCC began the proceeding to reallocate the 220-222 MHz band. Many of you may remember that proceeding. This band had been utilized (on a secondary basis) by amateurs, and the reallocation proceeding got bogged down as the amateurs resisted the FCC's efforts. The Commission's Notice of Proposed Rulemaking was released in December, 1989, but a final Report and Order was not issued until mid-1991.

In 1992, the FCC adopted its "Pioneer Preference" rules. At this point, given the sizable investment that UPS had made to develop the new technology to operate in the 220-222 MHz band, we determined that we would apply for a pioneers preference award. Our hope was to receive a "Pioneer" designation that would enable us to receive a license for this new technology without bidding for it at auction. While we did receive "tentative" designation as a pioneer, the Commission ultimately declined to issue us the award that we sought. But as we were getting to the point where we were ready to develop an operating "track and trace" system, two things occurred.

First, the FCC commenced to hold a series of lotteries to issue licenses in the 220-222 MHz band; however the geographic area covered by these licenses was very limited. UPS spent more than $50,000 to participate in these lotteries, and while we did win a few, we had nowhere near the nationwide coverage that we sought.

Second, in 1993, Congress enacted the amendments to section 309(j) of the Communications Act giving the FCC the authority to auction licenses based on the value that bidders placed on these frequencies. We do not quarrel with the determination that auctioning licenses has many advantages over lotteries or comparative hearings. But one of the side effects of enacting the auction statute was a long delay in the Commission's proceedings with respect to issuing nationwide licenses in the 220-222 MHz band.

All of the activity I've described to you took place between 1988 and 1994. The upshot is that UPS had invested over $40 million in its effort to develop a national digital data network using the 220-222 MHz band, which didn't come to fruition. We couldn't wait. Faced with unacceptable delay, UPS entered into agreements with many cellular licensees around the country to utilize cellular frequencies for the "track and trace" services that our customers were demanding. Today, UPS is the number one user of cellular services, with a nationwide network pieced together from cellular licensees that permits us to offer our customers the "track and trace" capability that they demand.

U.S. Postal Service Actions

UPS's primary competitor, the U.S. Postal Service, was not sitting idly on the sidelines. In 1996, the U.S.P.S applied for, and obtained, licenses to utilize frequencies in the 220-222 MHz band. This is the same band that we had spent more than $40 million—unsuccessfully—to obtain permission to use.

To get its licenses, the Postal Service didn't have to participate in an auction. It filed its applications with the Interagency Radio Advisory Committee—the "IRAC." The IRAC advises NTIA with respect to the need for Government users to obtain frequencies.

And who sits on IRAC? Well, among its members is none other than the U.S. Postal Service. The IRAC is comprised of Government users, who work together to ensure that the spectrum needs of all Government users are met. The Postal Service sits as a member of the IRAC, and participates in the process of advising NTIA on whether or not its licenses should be granted. It is at once an applicant, an advocate and a juror.

I suppose that would be fine if it weren't for the fact that approximately $12 billion dollars per year of the Postal Service's revenues comes from providing services in competition with the private sector, including UPS. But when the Postal Service is engaged in competitive activities, its membership on the IRAC gives it a huge competitive advantage.

Recommendations

The letter that Ken Churchill has submitted for the record states both the problem, and the solution, correctly. UPS, as a commercial enterprise, must fulfill its spectrum needs by applying for licenses issued by the Federal Communications Commission. UPS's primary competitor in the marketplace—the U.S. Postal Service—is treated as a government agency, and is able to obtain from NTIA the frequencies it needs to compete in the marketplace against the private sector.

The disparity between UPS and the Postal Service creates an enormous competitive advantage. UPS has had to live with the delays there are inherent in FCC proceedings. The Postal Service does not. UPS has to pay for licenses by bidding for them at auction. The Postal Service gets its licenses for free.

The competitive advantage enjoyed by the Postal Service is not merely theoretical. As I have illustrated, UPS paid a significant price, in both dollars and opportunitiy costs, to develop the system and obtain the frequencies needed to compete against the Postal Service. In contrast, the Postal Service has avoided paying the costs that UPS has borne, and has instead been able to acquire its frequencies without charge.

The solution is both fair and simple.

First, and at a minimum, when the Postal Service needs radio licenses in support of its competitive activities, it should not be treated as a Government agency by NTIA. It should be forced to go to the FCC and compete against everyone else for scarce frequencies. It is one thing to give the Government users of the spectrum the access that they need to serve the public interest. It is another thing altogether to grant the Postal Service preferential rights of access, under preferential terms and conditions, when it's competing against private business.

Second, a determination as to whether a Postal Service application is for radio frequencies to support competitive ventures should be made in a public proceeding,

and should be subject to challenge in the courts. It is not appropriate that this determination be made by the IRAC—on which the Postal Service sits. Nor is it appropriate that it be made without public scrutiny, or without accountability. The Postal Service should be subject to the same rules as the rest of us when it is acquiring frequencies in support of its competitive ventures.

Finally, in my view, the Postal Service should be removed from the IRAC altogether. To the extent that it is permitted to remain a member, it will be in a position to influence and use leverage over the other members of IRAC in order to benefit its own competitive services.

Mr. Chairman, this ends my prepared remarks. I will be happy to respond to any questions you may have.

Mr. TAUZIN. Thank you, Mr. Rogers.

We will now hear from Mr. Kenneth Crawford.

STATEMENT OF KENNETH C. CRAWFORD

Mr. CRAWFORD. Mr. Chairman, I am pleased to say that as a result of a TIIAP grant that we received 2 years ago, there are people alive in Oklahoma today that might have died Monday, May 3, so I am pleased to be here to testify on behalf of the reauthorization legislation.

My testimony will be based upon a program that we know is OK-FIRST. It was established in 1996 through a 2-year TIIAP grant. It was developed by my office at the University of Oklahoma. Our goal was to provide public safety officials in our State, that is police, fire and civil emergency management, with the data from the modernized National Weather Service, in particular their modern Doppler weather radar network, sometimes called NEXRAD, sometimes called the WSR-88D.

We also provided extensive precursor training, extensive follow-up after the fact, and we designed our system to be multipurpose, not just weather-related. My background in this comes from a 35-year professional career that had me in the National Weather Service in States like Louisiana and Texas and Oklahoma. And for the last decade I have been at the University of Oklahoma where I have had a little bit more freedom to be creative in these areas.

The weakness that I saw in the weather warning system of our Nation, be it Louisiana, Texas or Oklahoma, was simply the ability to—or inability to disseminate time-critical information to a population at risk. Often that meant a rural area. Historically, as the National Research Council has documented on a number of occasions, access to information from the National Weather Service has been cumbersome, expensive, non-intuitive, and lacked critical details. And while the modernization of the National Weather Service through the 1990's has helped considerably with the quality of that data, there still remains no real viable delivery mechanism to get time-critical information to public safety officials in rural areas. In particular, the public safety sector of our society have not really reaped the benefits associated with the modernization of the weather service.

It is my opinion that the rural population of our Nation is likely in an information drought when it comes to natural disasters. And as best I understand things from talking to friends across the Nation, the use of NEXRAD data in a host of public safety offices remains practically nonexistent, even though the NEXRAD radar network has been in existence for almost 5 years now.

In Oklahoma, as a result of TIIAP, we have 85 trained agencies. Of those agencies, 49 percent are from communities where the population is 5,000 or smaller. As you well know, we had major tornado damage in central Oklahoma 8 days ago. It killed 41 people. It wounded and injured 742. There were nearly 7,000 structures that were destroyed, mostly in central Oklahoma. And while the weather service and the broadcast media provided an excellent service, the rural areas were also being hammered at the same time that the media in Oklahoma City was saturated. All of the media attention went to Oklahoma City.

I would like to read just one of many comments that I can give you. This comes from the civil defense director in Guthrie, Oklahoma, to the north of Oklahoma City. He said when police and rescue crews arrived at the first Logan County damage site near the city of Crescent, one of the first tasks was to open the highway sufficiently to get an ambulance through from Crescent to the hospital in Guthrie. All efforts were to get that ambulance moving with a critically injured tornado victim.

About the time they succeeded, a second tornado approached in the dark and wrapped in rain. The ambulance and the tornado were moving on intersecting paths. Emergency management, aware of both events, was able to stop the ambulance until the tornado had passed in front of it, and he closed that episode by saying, "And we received no tornado information from any source other than OK-FIRST." And the reason he didn't was the media in Oklahoma City was saturated with what was going on.

I could give you a hundred success stories like that. I would close with three or four points. One, they would never had occurred had it not been for the availability of TIIAP funds to permit a pilot project that we know as OK-FIRST to be developed.

Second, in my opinion it speeded the development of this kind of information dissemination to the rural areas by at least 5 years, possibly even more. As a result of our successes in Oklahoma, the National Weather Service has now teamed with us to marry our efforts of OK-FIRST with their efforts, AWIPS, to try to take our work into a national forum.

Finally, I would close by saying had not the TIIAP grant opportunity been known to us, we likely would have never had thought about proposing such an effort as OK-FIRST.

My final comment would be taken from the Daily Oklahoma this morning. I picked it up on my way here. If Larry has PR people, it is just a coincidence, but there is a front page story, "Warning System Called a Life Safer," and it mentions TIIAP and the U.S. Department of Commerce on the front page of a very conservative newspaper. When journalists can say——

Mr. TAUZIN. Larry has his hands everywhere.

Mr. CRAWFORD. When journalists can say that they see the value in these systems, I believe we as meteorologists have gained a new level of credibility in our Nation, and I thank you for the time.

[The prepared statement of Kenneth C. Crawford follows:]

PREPARED STATEMENT OF KENNETH C. CRAWFORD, REGENTS' PROFESSOR OF METEOROLOGY, DIRECTOR, OKLAHOMA CLIMATOLOGICAL SURVEY, THE UNIVERSITY OF OKLAHOMA

Mr. Chairman and Members of the Subcommittee on Telecommunications, Trade and Consumer Protection of the House Committee on Commerce, I am Kenneth C. Crawford, currently a Regents' Professor Of Meteorology and Director of the Oklahoma Climatological Survey (OCS) at the University of Oklahoma. I am honored to appear before you today to testify on behalf of reauthorization legislation for the National Telecommunications and Information Administration (NTIA). Specifically, I bring testimony in support of the Telecommunications Information Infrastructure Assistant Program (TIIAP), a unit within the NTIA. My testimony also is based upon a program we know in Oklahoma as OK-FIRST—Oklahoma's First-response Information Resource System using Telecommunications—which was initially funded by TIIAP.

OK-FIRST was established in 1996 through a two-year TIIAP grant. Continued funding was provided by the State of Oklahoma during FY99. For FY00, funding is still subject to Legislative and Gubernatorial approval during the current Legislative session.

OK-FIRST, developed by the Oklahoma Climatological Survey, provides public safety officials in rural and urban areas with data from a network of modern Doppler weather radars (known as the WSR-88D or NEXRAD) along with other information from the modernized National Weather Service (NWS). In addition, OK-FIRST provides extensive precursor training on how to use and how NOT to use the data. From the beginning, the OK-FIRST system was designed to be multipurpose (e.g., it is routinely used during episodes of severe weather, flooding, wildfires, and hazardous material incidents).

I would begin by telling you that I have been on the faculty at the University of Oklahoma since 1989. During the intervening 10-years, my office has developed three major public-service programs—all lying within the scope of enabling legislation from the Oklahoma Legislature in 1978. The first service program is the Oklahoma Mesonetwork (known as the Mesonet), an automated network of 115 remote observing stations deployed across Oklahoma which provide environmental data at 5 minute intervals on an around-the-clock basis. Building upon this early 1990s effort which was funded by the State of Oklahoma, the OCS developed a K-12 educational outreach program designed to put real-time Mesonet data into the K-12 classrooms of Oklahoma and to bring the information age to tomorrow's leaders. This latter program, called EARTHSTORM, was supported for three years (1992-1995) by a competitively-earned grant from the National Science Foundation. Today, the Mesonet and EARTHSTORM continue to provide services to the citizens of Oklahoma using funds appropriated by our State Legislature and via funds derived from various other partnerships.

Our third outreach effort—known as OK-FIRST and made possible by TIIAP—was built upon the credibility brought to us by these past experiences along with a number of other relevant experiences and technological advances. This important experience base includes:

- My own experiences as an NWS employee of 30 years that encompassed duty as an operational forecaster, as a research meteorologist at the National Severe Storms Laboratory during the early development days of the NEXRAD program (Doppler weather radar that became known as the WSR-88D), and as a senior NWS field manager for nearly 10 years. The last 8 years of my NWS career were spent in central Oklahoma where the NWS was focusing much of its modernization effort at the time. From these experiences, I learned first-hand that a major weakness in the nation's weather warning system was the difficult issue of the dissemination of time-critical information to the populated area with the greatest risk.

  Historically, access to NWS information by local officials nationwide had, for years, been cumbersome, expensive, non-intuitive, and lacked critical details. The $4.5 billion NWS modernization of the 1990s made this problem much worse by producing vast amounts of high-quality, county-scale information with no viable delivery mechanism to those ultimately responsible for making life-and-death decisions. In addition, rural areas—traditionally under served by telecommunications and technology and often ignored by programs in both the public and private sector—were especially at high risk when severe weather, wildfires, and hazardous material incidents occurred. Consequently, local officials made weather-impacted decisions without adequate information (e.g., storm spotters were deployed precariously because coordinators lacked information about storm location, movement, and intensity). Despite the NWS mod-

ernization which dramatically improved their forecasting and warning capabilities, public safety officials still have not reaped many of the associated benefits. Thus, it is my opinion, based upon front-line experiences in Oklahoma during the 1980s, that the rural population of our nation is likely in an information drought when natural disasters strike. Disaster survey after disaster survey continue to point out that the population-at-risk did not understand the real risks they faced.

- The modernization of the National Weather Service included deployment of the WSR-88D radar network that consisted of 154 Doppler weather radars. Because of NEXRAD's thoughtful design, all data were digital, updated frequently, and sharable. Yet, access to and use of NEXRAD data in public safety offices remains pratically non-existent in rural areas due to a host of small issues (e.g., available funds, affordable fees, knowledge of what is available, training, etc.).
- The maturation of the Internet, and in Oklahoma, its statewide equivalent known as OneNet (funded by the State of Oklahoma for $14 million in 1992), represented a cost-effective capability to move data into the most rural of areas across Oklahoma. In addition, the maturation of PC technology represented the affordable tools to display important digital information.

All that was lacking to improve the delivery of critical weather information into rural areas was (1) an affordable access to NEXRAD data and an authority to redistribute this unique data to state and locally-supported agencies within Oklahoma, and (2) funds to develop a pilot project designed to deliver the best possible information from the modernized NWS to rural Oklahoma, including the provision of training and on-going support.

These two obstacles were overcome by a unique partnership, formed in 1996 between the Unisys Corporation of Kennett Square, PA and the University of Oklahoma. This partnership permitted the State of Oklahoma to acquire digital radar data from 15 nearby systems in the WSR-88D network (*Figure 1*—appended at end of narrative). As a result, access to the NEXRAD pipeline has become very affordable (compared to acquiring NEXRAD data agency-by-agency on the open market). The partnership between Unisys and the University of Oklahoma remains unique (as far as I know) among the four agencies authorized to distribute NEXRAD data beyond the Federal Government. With this partnership in hand, the State of Oklahoma was given the authority *to redistribute WSR-88D data to public safety agencies across Oklahoma*—to include civil emergency management, law enforcement, and fire protection agencies. As a result, Unisys now receives data fees from a market not previously tapped, because market forces had made the data prohibitively expensive for rural agencies that routinely operate on shoestring budgets.

In addition, funds were provided by a competitively-earned grant from TIIAP—$549,910 for 2.5 years beginning in October of 1996. As a result of the momentum generated by the TIIAP grant, eighty-five OK-FIRST agencies (*Figure 2*—appended at end of narrative) have been well trained (we believe) to access and use highly technical data produced every 6 minutes by each radar in the WSR-88D network (e.g., estimated hail size, the probability of severe-sized hail, the presence of mesocyclones, radar estimated rainfall, etc.) and to resolve potential conflicting information produced by two adjacent WSR-88Ds. Of these 85 user agencies, 49% represent communities where the population is 5,000 or less.

On May 3, 1999, the National Weather Service and the radio and television media contributed greatly to the quality and efficient delivery of warnings for a devastating series of killer storms. Clearly, the severe weather outbreak of May 3rd extracted a horrific toll, yet produced evidence that modern-day technology does save lives:

- 75 tornadoes moved across Oklahoma during a 10 hour period killing 41 and injuring an additional 742 Oklahomans. In their path, these tornadoes destroyed 4,156 structures (a grand total of 7,000 structures severely affected), and left an economic price tag that will exceed one billion dollars!
- WSR-88Ds used on May 3rd pinpointed the location of most, if not all killer storms with incredible accuracy and clarity.
- NWS meteorologists at the Storm Prediction Center in Norman, and at the NWS Forecast Offices in Norman and in Tulsa produced a series of outstanding forecasts and warnings that represent major dividends from the NWS modernization.
- The electronic broadcast media in Oklahoma City performed superbly—in fact, in my 35+ years as a professional meteorologist, I have never seen the broadcast media perform their warning dissemination tasks in so admirable a manner.
- Public safety agencies across Oklahoma also were trained and ready for this onslaught, due partially to the existence of OK-FIRST. They performed their local emergency response tasks in no less admirable a fashion—for the real miracle

of May 3, 1999 was a death toll that stood at 41 and did not exceed 1,000! The effects of the tornadoes which struck Oklahoma on that day could have been worse. Much worse.

However, the best story of May 3rd may not necessarily be those which made the national and international headlines. Instead, it might be how OK-FIRST worked as an information-delivery system to save lives on this most stressful of nights:

The OK-FIRST dissemination system shared 36,278 NEXRAD files of information with OK-FIRST agencies on May 3rd. A typical NEXRAD image used by an OK-FIRST agency on this day is shown in *Figure 3*—appended at end of narrative.

Steve Chapman, Emergency Management Director for the town of Chickasha (southwest of OKC), saw the tornadoes developing on his OK-FIRST displays. Using pinpoint information from OK-FIRST (hence, the NWS and NEXRAD), Mr. Chapman ordered the evacuation of the Chickasha Airport—fifteen minutes before one of the first tornadoes of the day struck. No fatalities or injuries resulted.

Later that evening, when another tornado demolished the Tanger Outlet Mall in Stroud (between OKC and Tulsa), all stores had been vacated. Ben Springfield, Lincoln County Emergency Management Director, used OK-FIRST and notified Stroud 30 minutes in advance.

People in their homes in rural areas also were more secure thanks to the actions of emergency managers that day. After the storms had spun their path of destruction across the Oklahoma City metropolitan area, they continued northeast. Residents in rural areas had minimal attention from the media, as local news media focused much of their coverage upon the devastation and recovery operations in and near Oklahoma City. One of Ben Springfield's assistants, who was monitoring the OK-FIRST radar display, relayed updates every five minutes on their scanner. People in the path of the tornado received the information and took shelter. Mr. Springfield said that many of these people would otherwise not have taken shelter had it not been for the trustworthy information coming across their scanner.

In Kingfisher County (northwest of OKC), the town of Dover was hit hard, with one-third of the homes destroyed and another one third damaged. Despite the extent of the devastation, only one fatality occurred. The town's warning system was sounded 10 to 20 minutes in advance of the storm, according to Danny Mastalka, Director of Kingfisher County Emergency Management. The lone fatality was an individual who received the warning but chose not to take action.

Rescue workers themselves were targets of the storms. A tornado completely devastated the small community of Mulhall in Logan County (north of OKC). Rescue workers set up a command center to manage the recovery operations. John Lewis, Logan County Emergency Management Director, saw another tornado approaching on his OK-FIRST system; it was following a nearly identical path to the first tornado. He alerted the command center to move their operations twice. As a result, the rescue workers did not themselves become victims of the storms.

Mr. Lewis, in his letter of May 10, 1999 (appended at the end of narrative) stated:

> "When police and rescue crews arrived at the first Logan County damage site near the City of Crescent, one of the first tasks was to open the highway sufficiently to get an ambulance through from Crescent to the hospital in Guthrie. All efforts were to get that ambulance moving with a critically injured tornado victim. About the time they succeeded, a second tornado approached in the dark and wrapped in rain. The ambulance and the tornado moved on intersecting paths. Emergency management, aware of both events, was able to stop the ambulance until the tornado had passed just in front of it. We received NO tornado information from any source other than OK-FIRST for this tornado."
>
> "The town of Mulhall, devastated by the initial tornado after it passed Crescent, was warned primarily by two law enforcement units sounding their vehicle sirens in the town. The units had been dispatched there by the Sheriff's Office based upon OK-FIRST data. Both units continued warning residents until they were each hit by debris: one by power lines down across his car, the second by a large tree on top of his unit. Both officers were uninjured—and so were all but one Mulhall town resident!" [Note: practically every structure in Mulhall, a community of 945 citizens, was destroyed, including the town's only water tower which had stood since the 1920s.]

In Seminole County (east of OKC), Emergency Management Director Herb Gunter radioed a warning to a convoy of emergency vehicles responding to a mutual aid call from the Oklahoma City area. Mr. Gunter noticed that another tornado was developing and would cross I-40 ahead of them. The law enforcement convoy closed I-40 so that neither they nor other vehicles would drive into the path of the storm. Unfortunately, two vehicles (and two fatalities) were later found swept from the road in the exact spot where Mr. Gunter identified the storm.

Meanwhile, in far northeast Oklahoma, as attention remained focused on killer tornadoes, heavy thunderstorms with flood producing rains brought 5-6 inches to Ottawa and surrounding counties on the night of May 3rd. Terry Durborow, Emergency Management Director for the City of Miami, used OK-FIRST to "help protect the public in a timely manner."

Incidentally, OK-FIRST has been named a semifinalist in Harvard University's "Innovations in American Government" awards program for 1999, ranking in the top 6% of the 1609 applications submitted. Selection of finalists in this prestigious awards program will occur at the end of May 1999.

These success stories (and others too numerous to document) would have never occurred had it not been for the availability of TIIAP funds. Three points illustrate the impact of TIIAP upon the development of OK-FIRST.

First, in my opinion, the development of an information-delivery system like OK-FIRST—one that would meet the needs of public safety officials because agency users are trained to use a modern information-delivery system—would not have happened prior to 2005 had TIIAP funds not been awarded to jump-start a project that now has national applications.

Second, the National Weather Service awarded substantial funds in FY99 to link OK-FIRST and the University of Oklahoma with the evolution of its LDAD System (Local Data Acquisition and Dissemination)—the external data-sharing arm of AWIPS (Advanced Weather Interactive Processing System). With NWS support, two agencies concerned with public service and public safety are working in partnership to bring university ideas and concepts into the Federal Government. The joint program is known as ONALERT—Observations Necessary for Aiding Local Emergency Response via Telecommunications. TIIAP funds made a cooperative project possible because the University of Oklahoma now is a leader in weather-information dissemination to rural areas and has much to offer the NWS in solving the difficult problem of getting modernized data into the rural communities of our nation.

Finally, and most importantly, without the TIIAP grant opportunity being available, the creative staff at the Oklahoma Climatological Survey likely would never have proposed a project like OK-FIRST. Moreover, other funds to develop a program like OK-FIRST would have been unavailable because federal leaders in Washington are not always sensitive to needs and constraints in rural areas and always seem to target national programs to populated areas. Furthermore, large corporations involved in weather dissemination are not always sensitive to rural areas (e.g., market forces have made WSR-88D data prohibitively expensive for small communities). In addition, smaller companies involved with weather information have provided neither adequate tools designed for public-safety use nor the training that is critical for the proper interpretation and application of the data. Thus, TIIAP funds bridged a long-standing chasm that exists in the complex chain of "technology transfer".

With these final three points, I am available to answer any questions you may have. However, I would call to the Committee's attention three figures appended to this narrative along with a letter from John Lewis, Emergency Management Director for Logan County (north of OKC). His letter provides a perspective of life on the firing-line that few people appreciate and understand.

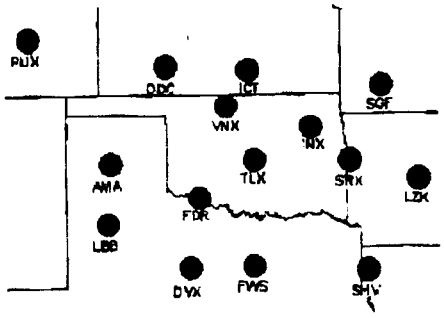

Figure 1. NEXRAD Units Available via the OK-FIRST System

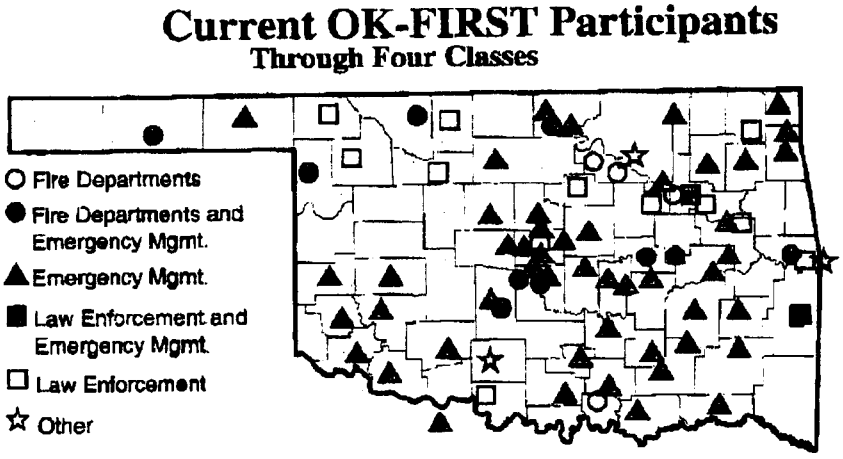

Figure 2. Locations of OK-FIRST Participating Agencies

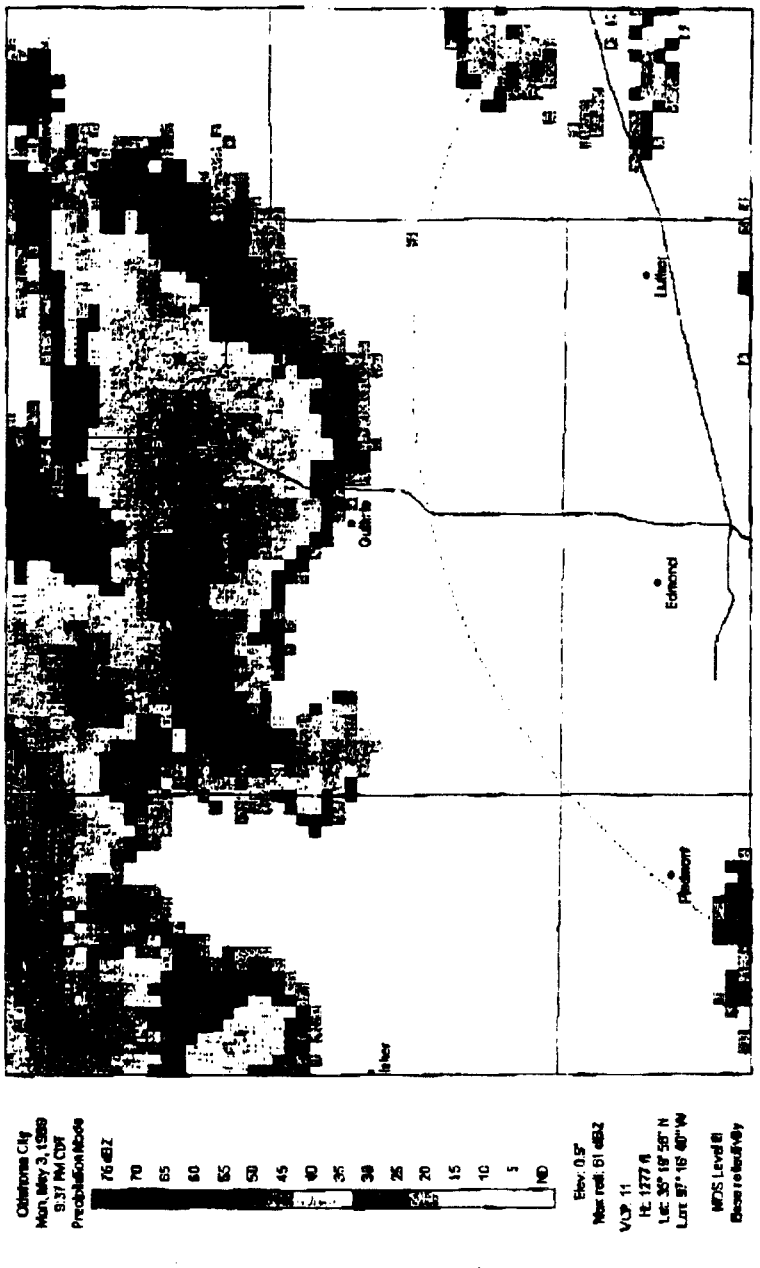

Figure 3. NEXRAD image shared via OK-FIRST on May 3, 1999. This image shows a tornadic thunderstorm in Logan County, Oklahoma (north of Oklahoma City). This storm went on to devastate the town of Mulhall.

LOGAN COUNTY CIVIL DEFENSE
GUTHRIE, OKLAHOMA 73044
May 10, 1999

Director
Oklahoma Climatological Survey
Boyd St
Norman OK

Dr. Crawford: I want to pass on to you how critical a role the OK-FIRST program played in response to the tornado disaster which occurred on May 3, 1999 in Logan County Oklahoma. Having current weather radar data, available "on demand" to emergency services, probably saved dozens of lives. Some examples follow:

Following the devastating storms in Oklahoma City, Moore, and Del City, numerous Logan County police and fire crews were eager to go there to assist. Only by real-time OK-FIRST data were we able to persuade department chiefs that our own threat was not over; that crews and equipment should be retained in our area until several additional supercells capable of producing tornados passed. Thus, emergency response was still strong in Logan County when we were struck about 90 minutes later.

When police and rescue crews arrived at the first Logan County damage site near the City of Crescent, one of the first tasks was to open the highway sufficiently to get an ambulance through from Crescent to the hospital in Guthrie. All efforts were to get that ambulance moving with a critically injured tornado victim. About the time they succeeded, a second tornado approached in the dark and wrapped in rain. The ambulance and the tornado moved on intersecting paths. Emergency management, aware of both events, was able to stop the ambulance until the tornado had passed just in front of it. We received NO tornado information from any source other than OK-FIRST for this save.

The town of Mulhall, devastated by the initial tornado after it passed Crescent, was warned primarily by two law enforcement units sounding their vehiclesirens in the town. The units had been dispatched there by the Sheriff's office based upon OK-FIRST data. Both units continued warning residents until they were each hit by debris: one by power lines down across his car, the second by a large tree on top of his unit. Both officers were uninjured—and so were all but one Mulhall town resident!

Police, sheriff, and rescue crews responding to Mulhall began arriving as two additional tornados approached. Requests for timely detailed storm information were very urgent. Emergency management provided continuous, accurate locations on two tornados at each 6 minute radar update. Locations of intense circulation were evident on the storm relative velocity product of the OK FIRST radar. Officers on-scene visually confirmed the presence of these follow-on tornados and accuracy of the emergency management's warnings, and scrambled out of the tornado's path. During these events, TV media was focused on other areas, then being hit by larger storms, so again there was no tornado information source except OK-FIRST.

During recovery operations on May 9, severe thunderstorms again threatened Mulhall where electricity was still limited, and widespread public viewing of news media warnings was impossible. Emergency management set up OK-FIRST displays in the command post. Emergency management used the radar and mesonet to evaluate the weather threat and provide a four hour warning. This was important for work crews in order to protect the exposed supplies and donations (clothing, toilet paper, bedding, etc) and adjust work schedules and locations. More importantly perhaps, town officials used bullhorns to notify the workers and residents, relieving fears and dispelling rumors of more tornados.

I hope these examples help to portray the crucial role played by OK-FIRST in warning, emergency response and disaster recovery. I am totally convinced that without the weather displays made available to us through OK-FIRST, and the training you provided to interpret those displays, there would have been a very different story to tell.

Please pass along our gratitude to your staff as well as the miriad of people responsible for making the OK-FIRST project a reality. We absolutely have to keep your project alive and growing.

JOHN W LEWIS
Director

Mr. TAUZIN. The Chair recognizes himself for a round of questions, and the Chair will be generous with time.

First of all, Mr. Irving, the gentleman from UPS, Mr. Rogers, in his letter to our office makes a fairly compelling case that he suf-

fers some real disadvantage with the U.S. Postal Service when it comes to the allocation of spectrum and the way the Postal Service sits on the very board that makes the decisions. How do you answer that?

Mr. IRVING. I don't believe I have a lot of discretion. The U.S. Postal Service is a creature of statute. They are a quasi-Federal agency. They have the rights of all other quasi-Federal agencies. I think the Congress, including the Government Operations Committee, would look askance if an Assistant Secretary said this is a Federal agency.

Mr. TAUZIN. You don't have a choice under current law.

Mr. IRVING. I don't. I have to do what the law requires me to do. Right now they are a Federal agency and they have the same rights and privileges of every other Federal agency.

Mr. TAUZIN. You also heard Mr. Ross make the recommendation of a much closer, cooperative agreement between your office and the ITA in terms of international trade issues. Has your office followed through on that recommendation? Does that require legislation? What is the news there?

Mr. IRVING. It does require us to work closer, but I think that the Department of Commerce and Congress needs to look at redundancies. I think there are some questions as to who has what role in what circumstances.

Mr. TAUZIN. Do you have some recommendations for us in that regard?

Mr. IRVING. Personally, I believe that there are some redundancies. I believe NTIA is fully capable of doing what needs to be done in national telecommunications. I wonder if we were starting from a baseline, if we would create two offices in the Department of Commerce that had international telecommunications responsibilities.

Having said that, having traveled across this country with U.S. industry, without ITA's support, particularly in-country support, the Foreign Commercial Service, I could not do my job. They know those markets and know those people. But having one office that has 16 or 17 people doing international telecommunications and another office that has 300 or 260 people, there are some overlaps and some questions.

Mr. TAUZIN. We need to visit more on that.

Colonel Skinner, you and Mr. Miller focused a little bit on the critical nature of security of telecommunications information, obviously for military purposes. Mr. Miller pointed out how NTIA assists in the bridging of that work so that private sector critical information is also subject to the same kind of attacks and security issues.

You probably cannot answer this, but it occurred to me we build stealth technology but that stealth technology is communicating as it flies, as it operates. Obviously emissions, points of emission of communications are points of—if I were looking for something, that is the place I would look. That is where we target radar on the ground when it is turned on.

How much of NTIA's work in allocating spectrum, working with you, assists the Department of Defense in protecting our vital assets when it comes to those kinds of threats? I assume that they

are threats. Identifying the source of a communication or some form of information technology obviously allows our military to identify the location of a potential enemy asset as it makes our own assets vulnerable to some degree. Would you comment?

Mr. SKINNER. I would prefer not to comment in detail in an open hearing. I think that you have hit an important aspect of our relationship with NTIA and the future of that relationship as well. Clearly as our technologically advanced adversaries become more able to counter our current ability to sense them, we need to take actions to improve that capability. And one of the challenges that it is creating for Secretary Irving and DOD is that many of the technologies that we need to imply against future threats require more and more bandwidth. While it is in our best interests to manage that bandwidth that is allocated to us as efficiently as possible, the demands for more bandwidth are growing. And all of those issues that Mr. Miller brought up strike close to home in the national security environment, and we have to use some of our bandwidth to provide the security our systems demand.

Mr. TAUZIN. Do you call upon Mr. Irving's lab? He was mentioning that if his lab were privatized, you would have to build your own. Do you use his lab?

Mr. SKINNER. Absolutely. Secretary Irving runs a real center of excellence. We have used those labs for national security projects, and we are concerned that outsourcing may change our relationship on a couple of fronts, as you will see noted in my written testimony.

At issue is both security and proprietary information that many of our weapons systems produce.

Mr. TAUZIN. You use private labs, but your point is for security purposes——

Mr. SKINNER. It must meet our security requirements and have the organizational conflict of interest, which is the way we can protect the intellectual property of our contractors who we want to have confidence in the DOD, which will protect their trade secrets as well.

Mr. TAUZIN. The Chair recognizes the ranking member for a round of questions.

Mr. MARKEY. Thank you, Mr. Chairman.

Mr. Crawford, your OK-FIRST program provides public safety officials in rural and urban areas with data from a network of Doppler weather radar, along with information from the National Weather Service. This is an innovative program, and I congratulate you for that because it helps to warn people of severe weather, flooding, tornadoes and hazardous materials accidents.

You already made reference to this, but in Oklahoma you helped save lives, and we very much appreciate that. How did you pinpoint those threats? What was the key? And if the program was not in existence, that is, if there was no grant program from NTIA, would lives have been lost?

Mr. CRAWFORD. In my opinion, yes. The reason for that is the public safety officials, be it fire, police, or civil defense, would have been operating from an information void, either due to lack of TV coverage, due to lack of quantitative details by teletype circuits, whatever means, it would be dated information and, in particular,

nonspecific. Now they have the same radar images that the National Weather Service meteorologists use. Once that NWS employee has made a decision this storm is tornadic, then the local official is empowered to follow it through its lifetime and take appropriate action.

Mr. MARKEY. Thank you.

Mr. Irving, as you know, I believe you are the Chamique Holdsclaw of telecommunications policy.

Mr. IRVING. My game is not that good.

Mr. MARKEY. In your testimony and opening statement, you noted that prior reviews of NTIA's research facility in Boulder, Colorado have resulted in a determination that there is a real need for a centralized cost-effective Federal telecommunications entity that serves the public interest and performs unique government engineering research.

When were these prior reviews conducted? What has been your experience with the NTIA labs in Boulder?

Mr. IRVING. The studies—we have had at least 4 studies. In 1983 under then-Assistant Secretary Sikes; in 1988, under David Markey, not Ed Markey; 1988, under Mr. Sikes; 1988, under our then budget officer, Sarah Maloney who now runs our management program at NTIA.

We just recently, working with the Department to look to see whether the labs should be folded into NIST labs, did another survey in 1997. I have asked for those to be included in the record.

[The information referred to is retained in subcommittee files.]

Mr. IRVING. But our experience has been basically that these labs do serve an important function. If we didn't have these labs, we would have to reinvent them and that is the concern.

A few weeks ago I was talking to Chairman Kennard, and I know this committee has had some conversations with Mr. Kennard. There are some important engineering analyses that they need done. They have requested, I think, either here or in the Senate to be able to bring on some engineering personnel. I believe the solution is to have them contract with my labs, and I have discussed that with Mr. Kennard. To the extent that you have engineering needs, I have got engineers, I have a facility, you can contract with them. It works in terms of the reauthorization that you are talking about with the commission, and with regards to preserving a important Federal resource.

But I don't know how the work we do with the DOD, which has to be both security and proprietary, my guys don't have a dog in most of these proprietary fights, and they have clearances that they need. So what we are able to do—and we also don't add a markup. It is cost-based. The Economy Act requires it to be cost-based.

So if the Colonel needs some information and he goes to the private sector, one, he has to find those labs that are not conflicted and those with the requisite clearances. And that may put him in a position of having to pay a monopoly price. I can't charge monopoly rent because the IG would come down on me if we mark up above what we are allowed to charge them.

Mr. MARKEY. Could you help to clarify for us notions of privatizing the Boulder labs related to cooperative research and de-

velopment agreements, agreements struck with the private sector? It is my understanding that these agreements reflect a very small portion of the overall operations of the Boulder labs. Can you tell us how they work?

Mr. IRVING. They are an extremely small portion. We have put $41 million in NTIA's lab total. I have a chart that I would like to enter into the record that demonstrates only about 1 percent of our labs—well, approximately 1 percent funding comes from work for other than Federal agencies. About 40 percent of the money is direct appropriations, and 60 percent of the money is work we do for other agencies. And depending on the year, it is 50 or 60, sometimes it comes up to 70 or 80 percent with the DOD.

The reality is we do what the Defense Department needs when they need it, but we are increasingly, I believe, trying to move to independence of the vagaries of the system. We have gone from $5.3 million in direct funding of the labs to $3.7 million now. That makes us more dependent upon Federal agencies. We like working with our brothers and sisters in the Federal Government, but we believe that we could be doing more if we had more direct funding. I don't know if these budget days we are going to get it, but it is—I think it is a misapprehension on many people's part that the work is being done for the private sector on a contract basis. Ninety-nine percent is done for the Federal taxpayer or for Federal agencies.

Mr. MARKEY. I ask unanimous consent that the report referred to in this answer be made a part of the record.

[The information referred to follows:]

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

Institute for Telecommunication Sciences

Sources of Funding-July 1999

($ in Millions)

	FY1994		FY1995		FY1996		FY1997		FY1998		FY1999	
	$	%	$	%	$	%	$	%	$	%	$	%
Direct Appropriations:	**$5.3**	**39.8**	**$5.7**	**45.6**	**$4.3**	**38.4**	**$4.3**	**39.1**	**$4.4**	**45.8**	**$3.8**	**38.8**
Other Agency:	**$7.6**	**57.0**	**$6.3**	**50.4**	**$6.7**	**59.8**	**$6.5**	59.1	**$5.1**	**53.1**	**$5.7**	58.2
Other	$3.8	28.5	$3.2	25.6	$4.0	35.7	$3.6	32.7	$3.2	33.3	$2.7	27.6
Defense	$3.8	28.5	$3.1	24.8	$2.7	24.1	$2.9	26.4	$1.9	19.8	$3.0	30.6
CRADA	**$.4**	**3.2**	**$.5**	**4.0**	**$.2**	**1.8**	**$.2**	**1.8**	**$.1**	**1.1**	**$.3**	**3.0**
TOTAL	**$13.3**	.....	**$12.5**	.....	**$11.2**	.....	**$11.0**	.....	**$9.6**	.....	**$9.8**	

Mr. TAUZIN. Without objection, the reports will be made a part of the record as well as the letter, Mr. Rogers, that you requested be made a part of the record.

The gentleman, Mr. Shimkus, is recognized for a round of questions.

Mr. SHIMKUS. Thank you, Mr. Chairman.

Mr. Irving, I have a couple of questions on the grant programs. That is primarily my focus of today. I want to talk about the PTFP grants first.

In St. Louis we have a wonderful public television station, channel 9, KETC. They have been very entrepreneurial in their aspects and are moving in the direction that I think Congress is expecting TV to move on. In fact, they just moved into a $13 million facility

of which only $500,000 was from the Federal Government. They were able to raise $12 million from the local community in St. Louis.

Now in your testimony you mentioned four stations that will be receiving grants: Seattle, San Francisco, Los Angeles, and Dallas. All these cities are larger than St. Louis.

I would like to know how much these stations have raised from the local community to assist in digital transition, and you may not be able to give me that information so if you can give me that in writing.

[The information referred to follows:]

If the PTFP grant award process takes into consideration whether a station has raised community funds to ease digital conversion costs. If so, are the stations penalized for making an effort to raise money.

By law, the PTFP is a matching program which can fund no more than 75% of the costs to construct public telecommunications facilities.[1] This restriction applies to all public broadcasting equipment replacement projects, including those to convert public television stations to digital technologies. Public television stations therefore are required to raise local funds in order to receive support from PTFP. Many stations use the opportunity afforded by having the Federal government match locally raised funds as a key component in their fund raising strategies.

In recent years, PTFP has usually awarded funding for equipment replacement, which includes digital conversion projects, at a rate of 50% Federal funding. Stations are permitted to request up to the legal limit of 75% Federal by providing justification of their need for this additional level of support. We believe that the PTFP therefore encourages stations to raise funds from their local community, while providing those stations unable to raise 50% of project costs with the opportunity to receive Federal support up to 75% of the project costs.

Mr. SHIMKUS. And does a PTFP grant application take into account what stations have done on their own to raise funds?

The issue is who are we rewarding? Are we rewarding those who are working and developing their base to move into this new age by the people that respect the service they provide, or are we rewarding those who are not moving as fast as we would like? That would be the first thing that I open up for comments.

Mr. IRVING. I don't have the specific statistics, but we will work with the Association of Public Television Stations to give that.

With regard to how we try to give grants, my preference is to try to give grants where the need is clearest. With regard to digital transition, I think all stations are going to have some problem making the commitment, the financial commitment needed to get a digital age. But there are some communities where they are going to have a hard time getting 10 or 20 percent. There are rural communities that are—to want to have digital television, smaller communities are going to have difficulty. The WGBHs, the WETAs, the WNETs will have some difficulty, but clearly they will have less difficulty than a station in the bottom 75, bottom 80 market.

Mr. SHIMKUS. I put this into baseball analogy. Look at these markets that you have in your testimony, Seattle, San Francisco, Los Angeles and Dallas, as compared to St. Louis. St. Louis fields a competitive baseball team because the consumers in St. Louis appreciate the St. Louis Cardinals and are willing to support it, although we are a small market.

[1] 47 U.S.C. 392(b) "with respect to any project for the construction of public telecommunications facilities, the Secretary (of Commerce) shall make a grant . . . except that such amount shall not exceed 75 percent of the . . . reasonable and necessary cost of such project."

Many of these markets—Los Angeles is probably 4 times larger than the St. Louis community. They should be able to go, based upon their community, and draw much better. So the question is how—I can understand the small markets, but you are not addressing the small markets in your testimony.

Mr. IRVING. Even in larger markets, it is a matching grant. We don't give anybody 100 percent of anything. We change the match for the smaller markets. On things like some new and novel approaches that all public television can derive benefits from, we will generally go to those who have the money up front and have the ability to drive out the technology.

Digital television is going to happen in the top 10 markets, for two reasons: One, those stations have the resources to do it faster. Two, the competitive realities, not that they should be in competition for commercial purposes, but in making sure that viewers who are moving to digital television, as they are moving to it in commercial worlds, we want to make sure that public broadcasters in those communities are also able to provide those kinds of services.

Digital VTRs, video tape recorders and other things in the studios were studios used first in the larger markets because they have some resources to offset. Many of the small stations are just trying to stay together. It is rubber bands and spit that keep those towers up and keep those VTRs running.

I can't tell you the specifics as to why those four were ahead of St. Louis, but if they were doing things that were novel, going to extend their services and provide a needed service in public broadcasting, that is probably why we funded them. I think all of us want to see the public continue to support public broadcasting, but I think we also know from the numbers that the public has never in any community supported public broadcasting with 100 percent of the funding that they needed.

Mr. SHIMKUS. The St. Louis statistics that I provided you shows a strong commitment. The point is that I want to reward those who are doing the job and not rewarding those who have the need but are not doing the job in their own markets.

Mr. IRVING. This is a rhetorical question, but what comes to me—if I have a station like a St. Louis that is raising a lot of money to do the right thing, and they come to me for a grant, I don't want to punish them for having raised a lot of money.

On the other hand, if I have a station that has raised a lot of money and doesn't come to me for a grant, that is unlikely. Almost none of the stations in the public broadcasting are not going to come to me for some assistance. I don't know how I measure if there is a recession in one community or they don't have a good PR person or fund-raising capabilities; do I make the decision based on that?

I will be happy to work with any member of the committee on that. I don't know what I do if there is a need in the community and they have the match. Do I not give them the grant because somebody else was able to raise the money on their own?

Mr. SHIMKUS. I just don't want you to penalize effort and commitment by the local community.

Mr. IRVING. I would love to be able to give better awards to those who are working with their local community. They should be local

and community-based decisions, not federally or Washington-based decisions.

Mr. SHIMKUS. Thank you.

Mr. TAUZIN. We will do a second round if anyone desires one. Mr. Deal, the gentleman from Georgia.

Mr. DEAL. Thank you, Mr. Chairman.

Mr. Irving, it is my understanding that NTIA subsidizes the other Federal agency spectrum management by about 20 percent. Would you describe the reimbursement mechanisms and how you determine the fee that is assigned to these agencies, and is it possible those fees could be increased without doing substantial damage to the management system?

Mr. IRVING. Let me answer the first question first. The fees could be increased without substantially damaging our management system, but we believe it would be a policy mistake to move it up to 100 percent. I can submit the glide path that we have been on for 4 or 5 years now.

Congress asked us to move from—for almost the entirety of NTIA's existence except for the last 5 years, we got appropriated every dollar that we used to manage spectrum for the Federal agencies. Over the last 4-5 years, we have been on a gradual glide path where it is now 80/20. A decision was made in consultation with the appropriations committees that that 20 percent was the appropriate number, because my spectrum management team works on behalf of the U.S. taxpayer as well as on behalf of the Federal agencies.

When those teams go off to Geneva, the ITU and other places, they are negotiating for all of America, not just any individual segment. The way that we charge our individual clients, members of IRAC, members of Federal agencies, is based on how many assignments and allocations they have from the Federal Government. The Department of Defense pays a significant portion. U.S. Information Agency or Department of Education may pay a relatively de minimis fee. And we are trying to get processes that we get paid in the front end of the year instead of the back end, but a lot of the budget officers in the services and in other Federal agencies have not yet figured out the easiest way to do it. We are doing better every year, but we are still waiting for some people to cut us a check.

I would love to continue to have some degree of autonomy. I don't want to become a captive of just my clients.

Spectrum, when Spectrum Management goes over to a war conference or goes to a standards conference—we have been working on GPS. We have a multibillion dollar commercial industry that is benefiting from GPS. GPS was a defense technology. We worked with the DOT and Department of Defense to develop the Global Positioning Satellite System. Now you can't go to a fishing store or a Wal-Mart and not find a $99 thing that any camper or boater can use. We have created a billion dollar industry based upon the work that we did with the Department of Defense.

There are other issues like that. Technologies are going to benefit every American as we get better, smarter uses of technology. It is not unfair to have one-fifth of that budget come from the general taxpayer as opposed to directly from our client base.

Mr. DEAL. Colonel Skinner, could you tell me how much DOD reimbursed NTIA for spectrum management last year and how that figure was calculated?

Mr. SKINNER. Sir, I would have to take that for the record. I don't have those details with me.

Mr. DEAL. Could you get that and also the payment time schedule as to when that payment was made?

Mr. SKINNER. Yes, sir, we will take that for the record. We believe it is approximately $5 million divided among the service components and agencies of the Department of Defense.

Mr. DEAL. Thank you, Mr. Chairman.

Mr. TAUZIN. Thank you, Mr. Deal. The Chair now recognizes Mr. Pickering for a round of questions.

Mr. PICKERING. Thank you, Mr. Chairman.

Mr. Irving, it is good to be on the Commerce Committee, and in the past, we worked together on the Science Committee on the domain name system and the transfer from NSF to NTIA. I have a few questions related to that.

The cooperative agreement has now been transferred, as I understand it, from the National Science Foundation to you at the NTIA. In your view, do you need congressional authorization or legislative authorization for that transfer of authority and administrative responsibility?

Mr. IRVING. I believe it is actually to the Department, and the Department has designated us. Our belief is what we are doing is consistent with the law.

Mr. PICKERING. Is there any funding as a result of that transfer that comes through NTIA to administer the domain names?

Mr. IRVING. To my understanding, the work we are doing on domain names is being funded directly out of our existing appropriated level. We have received no additional funding, nor have we requested additional funding for our increased responsibilities in working with the domain name system.

Mr. PICKERING. As you recall from the hearings we had in the Science Committee in the last Congress, as we transfer, go from government control to private sector control, one remaining question is to a certain degree accountability. To that objective, do you have any plans to issue a report concerning NTIA, the transfer of domain names, and what is being done so that Congress and the public will be familiar with what has happened, what is occurring, what is the governing board, those types of issues any time in the near future?

Mr. IRVING. I believe there is a final report that we will have to issue, but while we are working on this managed transition—and we want to get out of this business as rapidly as possible and have the private sector do it all, and we are getting to the point where the private sector can do it all. Everything that we do during the transition is public. I read an e-mail this morning that we are going to have an on-line discussion about what has happened with domain name systems. Every meeting that we are involved in, we try to make as public as possible. But we will have a final report explaining what is happening.

When we moved to the 34 new registrars, we immediately sent out information. And if any member of the committee feels that

they are not getting information, we will send folks up here to brief you. We want to get the information out. We do not have anything to hide.

This is the most interesting process that I have ever been in. People who care about domain names care about it as passionately as Trekkies care about Star Trek. I have never seen as much traffic cross my desk from people who are anguished about an issue that is so arcane, and so we know the importance not to try to hide anything.

Mr. PICKERING. Most people say this is just the transference of the domain names or the www.com and the registries. But fundamentally what is the crux of the issue is the governing body. We are setting up, in essence, the constitutional structure for how Internet operations will be conducted, disputes resolved, intellectual property determined. So it is much more important and much more comprehensive than just the transfer of domain name systems.

So, because of that, I want to encourage you to continue being as open as possible. If you are planning to do an annual report of what has happened, what is happening and what is projected to happen, I would encourage the NTIA to make that type of annual report to Congress so that we can inform the public of what we are doing; that it is not viewed as a closed process or an exclusive process or that any type of conspiracy could be projected onto the operation of what we are trying to do, which is a very important transition and very fundamental to the success of the Internet and the governing of the Internet in the outyears. Thank you, Mr. Irving.

Mr. IRVING. Thank you, Mr. Congressman.

Mr. TAUZIN. Thank you, Mr. Pickering. The Chair will do a second round.

Mr. Crawford, let me first thank you and the work that you have done in Oklahoma on behalf of all of us who are aghast at the awful loss of life and tragedy out there. I am facing a similar situation in Louisiana along the coast of my State. We have had some pretty good hurricane years, and very little hurricane activity in the last several years. They are predicting an 80 percent chance of a very mean season.

I also visited the FEMA offices where they tell me that New Orleans is going to be 27 feet under water with a category 4 storm coming in from Lake Borgne or Barataria Bay, which are the two big water areas on the other side of the city. Those kinds of storms will breach the levies, and New Orleans sits below sea level. Twenty-seven feet of water. You are not going to get a population of 1.5 million out of town. With the kind of warnings that we get, you will get some evacuation.

The ability to notify people in the face of that kind of a threat and to assist in moving them, perhaps vertically up into taller buildings or whatever it is going to take, is heavy on my conscience. I have been urging FEMA. We just passed some legislation to get FEMA involved in a vertical evacuation study.

But cities along the coastline that are going to experience potentially a disaster like that have no idea how to handle it. And I would be very interested in knowing whether what you put together in Oklahoma has meaning to solving problems like that.

You mentioned your own experience in Louisiana with their weather conditions. If you can briefly comment, sir.

Mr. CRAWFORD. I am quite familiar with your problems in southeast Louisiana, having worked at the New Orleans and Slidell offices for the Weather Service for 10 or so years. I worked with their SLOSH model to deal with surges from hurricanes in Lake Pontchartrain, so I know what you are talking about. And I think what hurts an emergency manager to know what to do is how bad is it going to be and where is it going to be the worst. And while we can give generic advice, today's modern society demands far more of us, because there are more of us and they demand more.

With the ability of the Information Highways that we have in existence in the Nation, it is very easy to send graphics of images that either are radars or projected radar images or forecast——

Mr. TAUZIN. It is not going to be the forecasting. We get pretty good forecasts right now. The problem is these storms make radical changes in their direction. And a forecaster may say, Our best information is going west, and all of a sudden it turns. We ducked the bullet with George, like we ducked our Y2 triple K problem in Louisiana when Duke didn't make the run-off.

But the problem we have with hurricanes is that they make that quick turn. We couldn't evacuate the city. What I am asking is whether or not there are models and whether or not we can learn from the Oklahoma experience as to what kind of systems ought to be in place to aid everybody who is going to be desperate to get people out of harm's way when this bowl of a city suddenly fills with 27, 28 feet of water. I just call that to your attention. I would love to know what you have learned in terms of how your system works and whether it has any relevance to us.

Mr. IRVING. When we give grants, one of the key criteria is whether or not they are replicable, whether or not what we learned in Oklahoma has any value in Louisiana, in Texas.

My understanding is that what they have done has become a national model and they are working with the National Weather Service to try to figure out how to do it and replicate it. What you basically have are the advanced weather service statistics and graphics laid over a map that gives you a sense of where things are likely to happen. While it would not maybe solve every problem Louisiana is going to have, if you have a tornado spun off from a hurricane, that will give you notice that you wouldn't otherwise have.

I have been down to Louisiana visiting Mr. Morial a few times, and you will not get everybody out when there is a problem. This will let the folks know where a hurricane or tornado is and where the storm surges are, where the heavy rains are likely to be, based on what I know.

And what we try to do is give folks like the counties in Louisiana the e-mail addresses, the telephone numbers, and other ways of getting in touch with the folks in Oklahoma so they can begin to marry their respective skills and knowledge and do a better job of transferring information.

Mr. TAUZIN. I would appreciate, at least if you could share with us how you think—knowing the weather experience you had in

Louisiana, how you think some of those systems might have a relevance for us?

Let me conclude. I am going to give everybody a chance. Mr. Rogers, I just want to ask you quickly. We can't change the law of this committee on the postal service obviously. We don't have jurisdiction. We do have jurisdiction over the IRAC.

IRAC sounds like a country. In terms of that, we could very easily require that IRAC hearings, when it comes to issuance of spectrum, will be public hearings. We could require that, perhaps take into consideration the anti-competitive nature of a grant of spectrum, or we could do some minimum things like that.

Mr. ROGERS. It would make a difference.

Mr. TAUZIN. I would encourage you to perhaps think about, within the jurisdiction of this committee, what it is we might do; and Larry, obviously we wouldn't necessarily change your authority. We would simply be talking about making sure that where there are any competitive issues at stake, that would be one of the considerations in the allocation of spectrum.

I suppose that might help, at least call attention, perhaps, in a public setting, to the——

Mr. ROGERS. I am sure the various bipartisan advisors I have could think up something very helpful.

Mr. TAUZIN. We would be very interested in hearing from you.

Mr. IRVING. There is one problem. The IRAC hearings are generally classified hearings and they are closed——

Mr. TAUZIN. That is what I thought. They have a lot to do with whether the military gets spectrum to——

Mr. IRVING. And it's going to be very hard to have a hearing that 95 percent of the hearing——

Mr. TAUZIN. Well, maybe you can have one when it deals only with the postal service. I am not sure our national security is threatened over a question of whether or not the postal service gets some spectrum to compete with UPS.

Mr. ROGERS. One of the things we proposed is that we have some sort of a hearing when the postal service seeks authority to determine whether or not it is in a competitive area and that that decision would be appealable in a court.

Mr. TAUZIN. We can look at that. Obviously, we have an interest, you know, in the postal service, and we want it to be strong and——

Mr. ROGERS. I am sure that we could come up with something to improve the situation.

Mr. TAUZIN. And I invite your comments on it. The Chair recognizes Mr. Markey for a second round.

Mr. MARKEY. Thank you, Mr. Chairman, very much.

Mr. Irving, you know, on this committee we have to deal with OMB and CBO, and they are constantly trying to put their fingers into the spectrum piggybank and grabbing more spectrum to go sell off for whatever purpose to meet whatever the short-term needs are, and the budget committee, all of them, there is a deep seated pathology as, you know, that exists when these budgeteers get together.

Now, we have Colonel Skinner over here, and he is somebody who has often had his territory raided in order to find more fre-

quency. Are you under any pressure right now to be talking to Mr. Skinner to get him to cough up some more spectrum so that OMB and CBO can put it in to be auctioned off?

Mr. IRVING. I would not want to have that conversation with Mr. Skinner or his colleagues again. We have had some very contentious discussions during my tenure, and I don't—but generally they have tried to work with us as much as they can. They have been cut deeper than anybody else in terms of what they have given up. We have given up 255 megahertz spectrum since I have been here which is an enormous amount of spectrum.

What is troubling about that is 95 megahertz of that spectrum is in the hands of the FCC right now, and only $14 million, only $14 million has been realized by the Federal treasury from all of the spectrum we have given over to the FCC.

It has cost the military $1 billion to relocate. They have given up between now and 2002, 255 megahertz of spectrum across all of their program platforms. They need more spectrum as they get smarter bombs and trying to keep our men and women out of harm's ways. One of those cruise missiles goes into a building anywhere in the world, that is using spectrum to direct it and to make sure it gets to where it is going and to identify the location.

I have got a very difficult time going to these guys and saying we are going to put boys and girls, men and women, into harm's way because you have got to give up some spectrum, and then we get $14 million into the Federal treasury and it cost the military $1 billion of appropriated moneys to have that happen.

I don't know what happened to this spectrum. It goes into some kind of a black hole, but it is not going out and being sold. And we are constantly being asked to give up more. I am not sure that the FCC—what they are doing with the stuff we have already given them or plan to give them.

Mr. MARKEY. That is very helpful to us now and, I am sure, to Mr. Skinner. You have helped his argument out a lot on whatever new issues might be heading in his direction.

Let me ask you at NTIA how you are handling the workload that we put on you—the WIPO legislation, the Satellite Home Viewer Act, the Child Online Protection Act, the International Bribery Bill, perform research and other studies for Congress coming from various directions. Do you have enough staff to get all this done for us?

Mr. TAUZIN. A good answer would be: "no problem."

Mr. IRVING. Because of the excellence of the staff with whom I work there is no problem. However, we——

Mr. MARKEY. Your staff, by the way, was nodding their head, no problem.

Mr. IRVING. They don't sleep, they never see their wives and husbands and children, but they do the work. They do an excellent job. Candidly, we are stretched. We are stretched beyond—Congressman Pickering asked us about an annual report. My problem is, my folks who work on the main names, the two people who work almost 80 hours a day on the main names, they are so busy treading water to keep all of the work we have to do on a daily basis, it is very difficult for them to do any prospective work or to do a report just on the bodies to throw into that fray when we are trying to

manage a transition. We are skeleton staff. You lose 25 percent of your staff over 4 years when you have about a 70, 80 percent increase in the area of responsibility you have.

And we will do with what this Congress asks us to do or the Secretary and the President and Vice-president ask us to do because that is who we report to, but we are really, really down to muscle and sinew. We don't have a whole lot of fat on our bones right now.

Mr. TAUZIN. Thank you very much.

Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman.

Mr. Crawford, has the University of Oklahoma ever violated a contract that is part of the NTIA grant?

Mr. CRAWFORD. If they have, I don't know it. My guess is the one we have is the first.

Mr. SHIMKUS. Okay.

Should there be provisions to prevent the violation of contracts?

Mr. CRAWFORD. What do you mean "violation of contract"?

Mr. SHIMKUS. Well, you get a grant, you sign an agreement, and if someone doesn't uphold their end of the agreement, should there be provisions to prevent that?

Mr. CRAWFORD. By and large, the university puts its name behind anything that it agrees to do and holds either the dean, the president, or faculty members like me accountable.

Mr. SHIMKUS. Should the NTIA have the ability to recover moneys spent on grantees that stop providing the service or don't follow up with the initial agreement?

Mr. CRAWFORD. I don't feel that I am really qualified to answer that.

Mr. SHIMKUS. Let me ask you this.

If you were awarded a grant and you promised to do X, Y and Z, and you only did X and the Federal Government gave you money to do Y and Z, do you think the Federal Government would be within its rights to recover the money for Y and Z?

Mr. CRAWFORD. Yes, sir, I do. I would say, though, that the likelihood of that happening the way this grant was monitored, the reporting back to TIIAP is so tremendous that it is very carefully watched.

Mr. SHIMKUS. Well, be careful because I have examples from the Inspector General, not in yours, but on grants that call into question how much we scrutinize grant applications, and I would like to direct my next question to Mr. Ross.

The report that I have in front of me is the Inspector General's report on LatinoNet, and I am sure that is a name that is infamous in the NTIA. If not, it should be. You report that you asked that the NTIA recover $94,336 in excess—to recover that in excess grant disbursements.

What happens after that? Have you—in a follow-up review, do you evaluate their ability to recover these moneys in previous reports?

Mr. ROSS. The normal process is when we issue a report questioning costs related to a grant, such as LatinoNet, first of all, the auditee, LatinoNet, the operator, is afforded 30 days to provide additional information to support its costs or any other issue raised by the audit report.

Within that first 30 days, it provides information. Then there is another 30-day interval during which the grants officer, who is within the Department of Commerce, also solicits the advice of NTIA because the Department's Office of Executive Assistance Management serves as the grants office for NTIA, reviews any information that the auditee might submit, for example, to document additional costs or, perhaps, additional work that was performed, reviews that documentation, and prepares an audit resolution proposal, which is then submitted to the OIG for a review.

So in any one of these grants that we have looked at, if we question costs, then the grants officer comes back to us with an audit resolution proposal that says we have reviewed the additional documentation that has been submitted, and any other supporting material, and based on that, we propose to make the following decision. We then would look at that information and come to a concurrence with the grants office of whether it is an appropriate basis to change our questioned costs.

So it is a concurrence.

Mr. SHIMKUS. Okay. And so this report was in August 1997, and your recommendation was an attempt to recover $94,336 in excess grant disbursements. Has there been a follow-up to determine whether that money has been recovered?

Mr. ROSS. What I can tell you is, as a result of the resolution, the federal portion of the questioned costs was reduced from $118,991 in the report to $31,014 in disallowed costs, which would have converted into a recovery amount that I don't have in front of me. That then gets communicated to the operator. The audit determination letter says that the Department of Commerce has established a debt in X number of dollars.

The Department makes demand immediately, but the organization could try to enter into a repayment agreement, if it cannot pay up immediately, under the standard debt collection provisions of the Department.

The Department does have a mechanism whereby every 6 months the Secretary of Commerce has to produce a report that follows up on what has actually happened with those disallowed costs and the amount to be recovered. I can't tell you as I sit here today what the current status is. I will be glad to submit that.

Mr. SHIMKUS. If you would, please.

[The information referred to follows:]

The audit resolution was transmitted to LatinoNet by letter dated December 9, 1997. LatinoNet was advised that $77,496 of the questioned costs of $297,329 was disallowed. (The federal portions of those amounts were $31,014 and $118,991, respecttively.)

The period of performance for the award was October 15, 1994 through October 31, 1996. The audit covered the period up to March 31, 1996. Because seven months remained on the award, the recipient was not billed for the excess funds disbursed as of March 31, 1996 ($6,359). LatinoNet was required to delete the $77,496 in disallowed costs from its claimed costs and to submit to the Office of Executive Assistance Management a revised SF-269, Financial Status Report, to reflect the revised costs as of March 31, 1996. In addition, LatinoNet was asked to provide a final SF-269.

Mr. SHIMKUS. And following up, if I may, Mr. Chairman.

On Mr. Irving, it is my understanding that on these grant applicants, they are quarterly reports, and it is also my understanding that the problem with LatinoNet really surfaced a year after, al-

though they—in fact, in their response, they say, well, we have been submitting quarterly reports, you-all haven't questioned them, so they must have been okay, so we don't need to pay this debt because you have approved them.

How do you respond to an accusation like that, and what good are the quarterly reports if you can't put an early halt to abuse of Federal funds?

Mr. IRVING. The quarterly reports are useful. There are some things that are obvious right from the quarterly reports, and we can go right to them. There are other times, if you have 400, roughly, grants out there, there are going to be some problems.

I don't know if they are bad actors or just problem children, but some percentage you are going to have a problem. In some instances we have gone to the IG and said we are hearing there is a problem, will you investigate for us because I don't have the staff to go out and do the kind of investigation that they can do in terms of a field audit.

We often, on a blind basis, send people out to do field monitoring. What we try to do is what any organization that is responsible for handling public goods should do. With the resources we have, we try to get the reports in and look at them for facial problems, and then we try to go the extra step and send folks out. But we can't send and shouldn't send, I don't believe, field monitoring to every office we give a grant to. But we do try to give a fairly representative view and have folks out there looking at the problems. And if we know either from our view, what we are hearing from across the trenches, somebody lets us know anonymously, or when we go out and do a field audit, we will call the IG and say, please check this out for us, you have got the resources to let us know. And I think there have been occasions where we have had some problems within PTFP and in TR.

Can we do a better job? If we had more resources, maybe, but given the resources I have, we have done a pretty good job, I think, of making sure that we are not wasting Federal resources.

Mr. SHIMKUS. Thank you, Mr. Irving. I do have a follow-up, but I will do it in the next round, if I may, Mr. Chairman.

Mr. TAUZIN. The gentleman from Georgia, Mr. Deal.

Mr. DEAL. Mr. Rogers, we have heard reference to the fact that spectrums are not raising the funds that were anticipated. As I understand, UPS spent over $40,000.

Mr. ROGERS. $40 million.

Mr. DEAL. $40 million to develop an alternative system to the one that the postal service received from the granting of their spectrum for free. Would that $40 million have been a good investment had you been able to purchase the spectrum in a timely fashion?

Mr. ROGERS. Yes.

Mr. DEAL. And would you have preferred to have had that alternative approach?

Mr. ROGERS. Yes, but spectrum is an asset that, as technology improves, you can do more and more with it. The position we are in now is we are a purchaser of message units from vendors of message units, and it is more difficult to advance the technology when you are buying it on a per unit basis.

Mr. DEAL. And as I understand, part of the reason was the fact of the delay in the auctioning process; is that correct?

Mr. ROGERS. Yes. It really slowed us down, and we were to a point where the competition who had gotten ahead of us in the spectrum race was putting out services and we weren't, and we just had to do something. The cellular system had developed to the point that it was providing us with a real alternative to use digital data on a cellular network nationwide, and we jumped into it.

Mr. DEAL. Had that spectrum that postal service received been auctioned, do you have an opinion as to what the fair value of it would have been?

Mr. ROGERS. I really couldn't judge. I don't know even if any of the nationwide 220 spectrum was ever auctioned.

Mr. DEAL. Okay.

Mr. ROGERS. We just—after we went cellular we didn't put the effort into this to follow it up until we saw a notice in the newsletter that the postal service was going and getting the same spectrum that we couldn't get.

Mr. DEAL. Thank you.

Colonel Skinner, could you give us some specifics as to what changes that you might be looking for in the current spectrum policy?

Mr. SKINNER. I think that, number 1, you have to ask yourself today if you have a spectrum policy. You know, a lot of things have changed since the radioactive 1934. We have talked a lot today about technology.

Mr. DEAL. Well, if we don't have one, what would you suggest we do?

Mr. SKINNER. Well, I think we have to consider all the equities that make up the American interests in this resource.

We have to understand it is not a renewable resource. If we give it to a specific user to use as he or she would use it, it will not be available to others unless we can harness our technical prowess on sharing the spectrum that is available, and we have many, many demands, many different demands.

There are many different elements of national power, whether it be the Defense Department's or our economic power on international community. And we also have to consider ourselves that we are part of a larger international community, and in the case of military interests in this area, what we do in the United States, we need to be able to export as we take our military interests overseas. And so we have to consider that larger international aspect.

We have to consider, frankly, the fact that other developing countries have interests in spectrum which we are currently using. It is a very, very complicated issue, but it is certainly one of national importance.

So I know I have described what the problem is, and I cannot offer you solutions today. But it is going to take some of the best minds in the world, some represented today in your hearing, that need to lay down the groundwork for a new National policy on how we use and allocate spectrum.

Mr. DEAL. Thank you, Mr. Chairman.

Mr. TAUZIN. Thank you, Mr. Deal. The gentleman from Mississippi, Mr. Pickering.

Mr. PICKERING. Thank you, Mr. Chairman.

Mr. Irving, part of our congressional responsibility is oversight and to hold whether it is NTIA or any administration's feet to the fire.

But I think it is also our responsibility to say good job and to make a commendation when something right and good happens. And I want to recognize two things you did for the State of Mississippi: One, the grant for the University of Mississippi Medical Center which takes chronically ill children and it connects them back to their classroom, to their teacher and to their families and is a great model of what can be done with technology to improve the quality of life.

And the second thing I want to commend is the emergency grant to the Mississippi Educational TV. When the tower collapsed and lost that service, you quickly stepped in. And we were able to get that service back up and running.

So I want to begin this round by first saying, thank you, and acknowledging and giving you a sense of appreciation from the people of Mississippi of what you have done.

The second thing is a question on research, and the third if I have the time, goes to culture. On research, one of the things that we worked on in the 1996 Telcom Act was to make sure that electric utilities could provide telecommunication services. The barriers to their entry were removed, and that was something I was personally very involved and interested in because a State like Mississippi the rural electric utilities could provide the infrastructure, the advance network and all the capabilities and applications that come with that.

I was recently briefed on a technology, and I wanted to ask, one, if you're aware of it, and two, are there any plans to provide any research in these applications. Something called Media Fusion which takes the electromagnetic field that is generated around the electric wire during the transmission of power, that creates the field by which telecommunications, data, voice, video, could be transmitted. Are you familiar with this concept within this research both in our country and in Europe, and do you have any plans to perform any research in that area?

Mr. IRVING. I am not familiar with it, but next time I see you I will be familiar with it, and I will check with my labs. I don't believe we are doing anything on it right now, but I am certain that somebody there is familiar with it, and we can find out if there's a way we can—I agree with you completely.

As we watch more and more consolidation in the industry, if we can get more and more players like the utilities and others providing broadband and they are into the homes, that would be a great thing for the American people, and if we can find a way to get that in there, that's good.

Mr. TAUZIN. Just, actually at Stennis Space Center in Mississippi, a company called Media Fusion out of Texas is working with NASA on this technology, but there are others, there are others as well that are working on different aspects of it.

Nortel, I understand, has an aspect where they are working inside the wire itself, and they ran into some electric transmitter problems, but they have overcome those now. Some pretty exciting

work. It might be very good, Larry, to—frankly, I would love some advice from you as to whether or not any of this stuff is real because the gentleman, he will know more about it than all of us because I think the gridwork is going to go on in his—is Stennis in your district?

Mr. PICKERING. It is not in my district but it connects—Stennis really works in all of our districts as well as the rest of the country.

Mr. TAUZIN. They are going to have the grid in Mississippi, so he'll probably be the first to know about whether they are having success and what is going on with it, but I would be very interested in knowing from you, as you check into it, how much of this is real, because that kind of technology could dramatically affect the kind of policy we make on broadband and how we deal with critical information in the future.

I thank the gentleman for yielding.

Mr. PICKERING. Thank you, Mr. Chairman, and Mr. Irving. I will try to work with you and your office to get you further information, and again, as Mr. Tauzin said, it would be good for us to have some of your technical advice and your judgment as to the viability, the potential, and whether it warrants a research investment, whether it is by NTIA or NASA or other entities, where we can bring the potential of a technology that could be a very important component of reaching out in rural areas and all over the country.

Mr. Chairman, if I could ask for an extension of just one more question?

Mr. TAUZIN. Without objection, it will be awarded.

Mr. PICKERING. My last question, and this goes back to a parallel policy that we did in the 1996 Act as well and where the administration advocated and supported the V-chip, and in your testimony you talk about what we need to do to look at indecent and violent material on the Internet and how we can try to find ways to protect our children.

Congressman Franks and I have introduced a bill that would require all schools and libraries that receive the erates to—we don't mandate a filter, per se, or we don't tell them exactly what filter they should use, but that they must have some type of filtering device if they receive an erate. Would the administration support that legislation and that approach?

Mr. IRVING. We are close, but it is not an exact fit. We have sent a letter to the FCC on behalf of the administration requiring that every school district or library that receives Federal funding, the erate, to have an acceptable use policy, that the local community make a decision as to how they are going to protect——

Mr. PICKERING. Mr. Irving, if you require every TV set to have a V-chip mandate, why can we not say that every school and library, especially after Littleton, have a filter?

Mr. IRVING. Filtering technology, we are trying not to mandate a technology for something as dynamic as the Internet, and again, the V-chip can be turned on or off. A parent can have a V-chip and disable it.

You put a filtering device inside of a computer, you are telling the library you have got to use it unless you are saying, put a filter in there and then you have a choice. I have a choice as a parent. If I was a parent or my niece and nephew come and visit me, I can

disable the V-chip, I wouldn't, but I could. I don't know if it is from Washington we should mandate how Texas or New York City or Tulsa or Jackson should check their children and that is—we agree a 100 percent——

Mr. PICKERING. You mandate for each TV set that is manufactured that they have a V-chip. There is a little disconnect from a principle point of view as to why you can mandate a V-chip in a TV, but let us say, a sixth grader receiving an erate, you wouldn't say that he should be protected from pornography or violence like we saw the groups in Littleton. And surely, we have the capability to find a flexible technology that appropriate subject matter can be available to school-age children while we can block offensive, indecent, and violent material. And surely, the administration would put a high priority in research into the technology of the type of filter that would protect our children.

Mr. IRVING. We agree 100 percent that we need the technology. We agree 100 percent that we need to find a way to make sure that the people who want to use the technology can have the technology. The only place where the minor difference is whether or not Washington should mandate it or whether we should leave it up to the——

Mr. PICKERING. Didn't the administration support a mandated V-chip in a TV?

Mr. IRVING. We support a mandated technology in the TV, but not a mandated use of that chip in the television. There is the difference.

Mr. PICKERING. But surely we can find a way that you can turn off a filter and turn it on.

Mr. IRVING. If you are going to do that, then you are pretty close to the acceptable-use policy that we have because a community still has the ability, if it wants to go out and get a computer with a chip in it if they want to do that. But we are not mandating that they do use blocking technologies, and I have looked at all of them, CyberSurf, Target Patrol, Net Nanny. I have gone through a lot of them to see what works. They all have some glitches. They all have a problem that doesn't make them perfect. So you——

Mr. PICKERING. Could you provide research into the glitches so we have a——

Mr. IRVING. I can't, but we can certainly work with you to develop it. This is anecdotal, personal experience, but I will certainly work with my staff to get back to you on some of the problems, what has happened, and I think we can put some surveys together and work with you on that.

Congressman, I want to assure you, I want to do the same thing you do. I want to protect America's children from filth, from violence, from pornography. I don't, however, feel that on behalf of this administration we can mandate a particular technology. And we also—and I kind of feel like I am on the wrong side of this argument. I am kind of going to State and local rights, not a position I have been——

Mr. PICKERING. Let me get this straight. The administration's policy is that we should have mandatory gun control requirements, but we should not have mandatory filters to protect them from por-

nography and violent material; is that the administration's position?

Mr. IRVING. I would say that you are correct that there are mandatory gun control policies this administration has supported, and you are correct in saying that with regard to whether or not every school and library that gets an erate should have a filter, we would say at this point, leave it to communities to figure out what is best for the people in the community.

Mr. PICKERING. Thank you. For the consistency in position, philosophy, and principal.

Mr. IRVING. I am trying.

Mr. TAUZIN. Consistency being the hobgoblin of little minds anyhow.

Actually, Larry, I am not at all quarrelling with your position. I think we have to be careful what we mandate in terms of technology. My friend, Mr. Markey, and I disagree on that to some degree. So this debate is going to go on some time. Although, I think we share the common purpose of advancing technology so that parents and schools and everybody else can have more control over what comes in under these systems. Obviously what a parent chooses to do or not to do in terms of how they raise their own children is one thing, but when the children are in the custody of the government, as they are in the school, public school, perhaps there is a different standard.

We need to talk about that. Maybe there is.

Mr. MARKEY. Will the gentleman yield?

Mr. TAUZIN. I will be happy to yield, my friend.

Mr. MARKEY. And we might be talking—we are trying to accomplish the same goal. So it is theoretically possible for a school to subscribe to an online service that does not need a filter because the only thing that kids have access to is good stuff. So mandating that they have a filter built into a service that already has been certified as kid-safe would create a dilemma for the school system.

So I think that we all agree that kids should be protected in school from stuff that they shouldn't be exposed to, but there may be a way in which there is just a generic program which is used that substitutes for a filter and the same goal is accomplished.

Mr. TAUZIN. And these are the old arguments, but I made them before, while the parents are watching the TV with the V-chip in it downstairs, the kids are going to be upstairs watching the old TV, unfiltered.

So there is all kinds of problems with how you manage these technologies in a home and in a public setting. But I think we can start with the proposition we all want to advance the ball in this area so that there is at least some opportunities to protect children, particularly when it is a government's responsibility because they are in a public setting, they are in a public school or hospital or what have you which is receiving government funds.

Mr. IRVING. And we also want to encourage industry and private sector and schools to create green space on the Net. We want to find positive places. I enjoy the Net. I love the Net, and I can find wholesome things to do 24 hours on the Net. There is a lot of bad stuff, and I think if we created opportunity and incentives to create green spaces where if you are in that space, you have pretty much

certified that your child is going to be safe. That is the important thing.

When I was growing up, my momma wouldn't let me play with certain boys or go to certain playgrounds because she didn't like the element there. She would say you can play in the park down the street but don't go to the park across town because I don't like those kids over there.

Mr. TAUZIN. I know parents who wouldn't let their sons and daughters play with you.

Mr. IRVING. Oh me, far too many of them. It hurt my dating, but if we can find more positive places on the Net for our children, as well as finding ways, and I want to continue to work with you, Congressman, on this minor difference we have on finding ways to bridge it. This is important for our children. It is too much good stuff for us to say the Net's an evil place.

Mr. PICKERING. And Mr. Chairman, let me just follow up. I believe Mr. Markey may have hit on something that, you know, maybe there are other ways in a filter that we can protect, a safe place for our children, and I am willing to work with you and with Mr. Markey and Mr. Tauzin to see whether it is a multitude of tools that we can bring to bear, but we should find a way, and we should do something in this area. We ought to look at it just like we do toxic pollution because, for our children, it is deadly and it is dangerous.

Mr. IRVING. I think everybody that I work for, including me, will give you whatever resources you need to help accomplish that goal. We want to do what you want to do.

Mr. TAUZIN. In fact, it might be very interesting, Larry. You might be interested in helping us with this. I have talked about doing this for quite a number of months, and we never really put it together, but it may be useful for us to have a hearing where we actually look at the state of technology, and we hear from people who are innovating and developing new technology like this, new security systems.

I know Mr. Miller could probably contribute a great deal with your member organizations.

Mr. MILLER. I would second what Mr. Markey was suggesting. We share Mr. Pickering's goal but what is happening is this is becoming a competitor's issue and different products, particularly when they are trying to get into the schools and get into the libraries, are going to come out and offer the fact that they either have tool capabilities to offer the kind of acceptable-use policy that Mr. Irving was talking about and that you are trying to achieve, Mr. Pickering, or they are not. And if they are not, they are going to find themselves at a distinct disadvantage in the marketplace.

So there are very strong incentives right now in this industry and there are some products that Mr. Markey was suggesting which are already very prideful of their ability to filter out, and that is one of their strong selling points when it comes to——

Mr. TAUZIN. It might be good at some point—we will discuss it with you—to actually have a hearing at some point where we examine the state of all that technology because obviously if we are going to enact some policy in the area it ought to be as expansive as possible to take into account all those possibilities. So, again,

this is maybe the beginning of a very good and useful discussion, and we will continue at another date.

Any further questions by any member of the committee? Let me thank you all—I am sorry, Mr. Shimkus.

Mr. SHIMKUS. I would like to ask to keep the record open for suggestion——

Mr. TAUZIN. Without objection the record will be open for 30 days, 30 days.

Mr. SHIMKUS. I have got a lot of questions. Mr. Chairman, can I ask——

Mr. TAUZIN. The gentleman is recognized.

Mr. SHIMKUS. [continuing] three short questions. One, going back to Mr. Crawford. Going back to one of the IG reports in 1997, if you were listed as an—your application was listed as outstanding, and then the assistant secretary took seven of the outstanding requests and for reasons only dispersion of grants throughout the country and you knew that you were one of—there were 38, now there are 31 grants going to outstanding candidates, you were one of the candidates that was pulled off, do you feel that the university would at least deserve some justification for that?

Mr. CRAWFORD. I think university faculty are used to being told no a fair amount, and so we would have just taken it in stride and not thought twice about it, but would have vowed to come back the second time and do better.

Mr. SHIMKUS. So you don't have any problem with the Federal Government not justifying why one grant went versus against another?

Mr. CRAWFORD. No.

Mr. SHIMKUS. Especially when one grant may have been listed as fair versus as outstanding?

Mr. CRAWFORD. Those are details that normally an individual like me would never, ever know.

Mr. SHIMKUS. That is why we have a Federal Government that has an Office of Inspector General, so everybody has access to these public documents, and people could find out that information should they want to know the internal proceedings of a Federal agency.

Mr. CRAWFORD. No. I think most of my colleagues would not question it. They might be disappointed; but they would not question it, saying that is the way it is, and we will just do better next time.

Mr. SHIMKUS. But you already got an outstanding. You were listed as an outstanding applicant. How much better can you get in the next try?

Mr. CRAWFORD. Well, sometimes there are emphases that an administration or a Congress would bring to bear as a hot button issue.

Mr. SHIMKUS. And, Mr. Irving, can you address some of those?

Mr. IRVING. I would love to. Let me tell you what can happen. I had, say, 38 outstandings. I might have had 100, 150 outstandings, but I might not have had an outstanding from, since I am from New York, New York State, and I want geographic dispersity or diversity. So what I will do is I may not—in the State of Illinois I may have eight outstandings. In the New York the best

I have is a fair. I want to give every State—maybe all I can do is two in Illinois so I want to give all to Illinois, so I give one to——

Mr. SHIMKUS. I don't know, Illinois, if they are all outstanding.

Mr. IRVING. Maybe it is one fair in Illinois and eight outstanding in New York and I want geographic diversity. Maybe I have got five that are using satellite technology and one fair but the board says with a little bit of tweaking this can be a great grant, but the way they wrote it it is only a fair grant.

I did college admissions, and a lot of times we wanted to get a kid who was a drum major into the university. He may not have a 3.9, he may not have a 1600, but he is the best drum major in the country or he is the best tuba leader or he is a great entrepreneur and made a billion dollars with some innovation.

That is what we do with these grants. We try to look below the surface. If I could fund every outstanding grant I would, but I can't.

Mr. SHIMKUS. Let me follow up, and I understand and I appreciate you all do great work, but the IG has testified you haven't provided justification for these——

Mr. IRVING. What he said was we didn't provide justification for the ones we dropped off. We did provide justification for the ones we added on, and the reason we didn't provide justification, I didn't know you wanted it. We will in the future. There will never be a grant that is dropped off——

Mr. SHIMKUS. I think it is only fair if they provide an outstanding application and they make it to the final-cut list and then they get dropped off for——

Mr. IRVING. Congressman, can I make one point?

Mr. SHIMKUS. Sure.

Mr. IRVING. That final-cut list is the list that is presented to me by my staff, and they have a great deal of knowledge, but they don't have necessarily all the political knowledge I have of what the Congress wants me to emphasize, rural, underserved, this year we want to make sure we do more satellite and so——

Mr. SHIMKUS. I understand.

I hear you, and let me follow up with this question. Can you provide for me, for the record, the grants that have not met the requirements, which of those fell into the scoring breakdown for applications? My question is, if we are making political considerations, and then we are providing grants to fair and good applicants based upon political applications, then we have a problem like LatinoNet that cannot meet their requirements and actually end up owing the Federal Government.

Then that is something that we ought to look at, and I think we are justified in asking those questions.

Mr. IRVING. When I say political, I want to be very clear. I mean, things like this Congress has said to me, we want rural, we want you to focus on underserved, not on—this is not——

Mr. SHIMKUS. No, no, politics—good politics is good government, but what I am saying is, we have an Inspector General's report on LatinoNet that show that they didn't meet their requirements and owe the Federal Government a lot of money.

I want to know if they were a poor rating, and if they were a poor rating, if they were bumped up because of good political con-

siderations, dispersal, big cities, inner cities, minority populations, whatever, I think that ought to be put into consideration.

Mr. IRVING. I will be happy to find out what their rationale was—what the rating was for LatinoNet.

[The information referred to follows:]

LATINONET

In 1994, LatinoNet of San Jose, California, received a TIIAP grant in the amount of $450,000. The grant was made for a demonstration project to show how minority communities can participate in the nation's advanced information infrastructure.

LatinoNet's application was highly rated by the peer review panel, receiving a "Good to Outstanding," "Good Plus to Outstanding," and "Good" ratings respectively from the three panelists. [Note: Outstanding indicates "Recommended for Priority Funding," Good indicates "Recommended for Funding if Funds Available."]

The application was rated in the top 20% of applications reviewed by the review panel. Based on its high ratings, the TIIAP Director recommended the application for award.

The OIG audit of LatinoNet occurred while the grant was still active. At the time of the audit, LatinoNet had received an excess disbursement of federal funds. However, LatinoNet spent local matching funds after the audit and, based on their final financial report, the Department's grants office has determined that LatinoNet does not owe the federal government any funds.

Mr. SHIMKUS. And we will probably follow up with other reports.

Mr. IRVING. Thank you, Congressman.

Mr. SHIMKUS. I yield back.

Mr. TAUZIN. I thank you—my mike is not on. You were mentioning grants in a lot of districts of members of the committees. You didn't mention Mr. Markey.

Mr. IRVING. To my chagrin and his dismay, we have never funded a grant in his district.

Mr. TAUZIN. You and I are pretty close. I will be happy to intercede for Mr. Markey.

Mr. MARKEY. I am living proof there is such a thing as good government. You would think statistically with 400 projects that he has given out——

Mr. TAUZIN. There is also another good Russell Long story I just really want to share with you because it is so good.

His staffer once—one of his staffers once came to him when he was having a particular important moment with one of the presidents of the United States who needed him very badly on a point. And his staffer said, well, sir, what you need to do is write out a good list of things you need from the president. When you see him this afternoon, just hand him that list. Isn't that a good idea?

And Russell said, absolutely not. And the kid said, well, why not? I think it would be a good idea. Just hand that list to the president. You know, he needs you bad right now. Just be good, put it in his hand personally, you know. And Russell said, no, terrible idea. He says, well, why not? He said, well, son, every list has an end.

Thank you very much. We are going to move, as I said, legislation this year on NTIA. We're going to do our best to get it done. So if you have some thoughts on how the grant program can be improved and want to add those sections of the bill, please submit them for the record, Mr. Ross or any of you.

If you have some—we mentioned some talk about how we might insure that IRAC perhaps a little fairer. We need to know how that

might work, Larry, in the context of national security. Comment back to us. The record is open for 30 days.

Gentlemen, thank you very much for the contributions you made.

[Whereupon, at 4:25 p.m., the subcommittee was adjourned.]